

GENERAL VIEW
OF THE
AGRICULTURE
OF THE
NORTH RIDING
OF
YORKSHIRE.

GENERAL VIEW

AGRICULTURE

HOETU LINDING

YORK AND LONDON



GENERAL VIEW *17 Id*
OF THE
AGRICULTURE
OF THE
NORTH RIDING
OF
YORKSHIRE.

DRAWN UP FOR THE CONSIDERATION OF *K. Academies etc*
THE BOARD OF AGRICULTURE
AND INTERNAL IMPROVEMENT.

BY JOHN TUKE,
LAND - SURVEYOR.

“ and he gave it for his opinion, that whoever
“ could make two ears of corn, or two blades of grass, to grow upon
“ a spot of ground where only one grew before, would deserve better
“ of mankind, and do more essential service to his country, than
“ the whole race of politicians put together.”

SWIFT.

LONDON:

PRINTED BY B. MCMILLAN, BOW-STREET, COVENT-GARDEN,
PRINTER TO HIS ROYAL HIGHNESS THE PRINCE OF WALES;
FOR G. NICOL, PALL-MALL, BOOKSELLER TO HIS MAJESTY,
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JOHN ARCHER, DUBLIN.

1800.

6

GENERAL VIEW
OF THE
AGRICULTURE
OF THE
NORTH BRITISH
ISLANDS

Jos: Banks

ADVERTISEMENT.

THE great desire that has been very generally expressed, for having the AGRICULTURAL SURVEYS of the KINGDOM reprinted, with the additional communications which have been received since the ORIGINAL REPORTS were circulated, has induced the BOARD OF AGRICULTURE to come to a resolution of reprinting such as may appear on the whole fit for publication. It is proper at the same time to add, that the Board does not consider itself responsible for any fact or observation contained in the Reports thus reprinted, as it is impossible to consider them yet in a perfect state; and that it will thankfully acknowledge any additional information which may still be communicated: An invitation, of which, it is hoped, many will avail themselves, as there is no circumstance from which any one can derive more real satisfaction, than that of contributing, by every possible means, to promote the improvement of his Country.

N. B. *Letters to the Board, may be addressed to Lord CARRINGTON, the President, No. 32, Sackville-Street, Piccadilly, London.*

ADVERTISEMENT

The undersigned, having been appointed
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do hereby give Notice, that he will
be ready to receive the same, on
Monday the 1st of June, at 10 o'clock
in the forenoon, at the Court House,
in the City of Edinburgh.

Wm. Murray, Clerk of the Court.

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Wm. Murray, Clerk of the Court.

INTRODUCTION.

IN drawing up the following View of the Agriculture of the North Riding of the County of York, it has been my particular object to adhere as much as possible to facts; to avoid theory, or touching on disputable or doubtful opinions or experiments; to detail at length, and with as much perspicuity as possible, every circumstance of the Agriculture and Husbandry of the Riding, which was peculiar to it, if thought to be meritorious; and to pass over in silence, or slightly to notice, such circumstances as were common to other districts, and which had been fully detailed in Reports already published: attention to these, would only have swelled this Report, without adding to the utility of it. Several circumstances of a local nature, but which might in practice prove extensively useful, I have pointed out; and others may have escaped notice; but such as have occurred, are sufficient to vindicate the expence bestowed upon the Survey, and to shew the great benefit the Public will certainly derive from the extensive circulation of agricultural facts and knowledge, of which they may take advantage,

when that arduous undertaking, a Survey of the Whole Kingdom, shall have been accomplished, and submitted in its corrected state to them.

It will be sufficiently clear, from the great addition made to the Original Report, that I have received much assistance from many intelligent Gentlemen and Farmers, and that the intentions of the BOARD of AGRICULTURE, in circulating that Report, have been fulfilled, by that circulation having excited a very extensive attention to the subject in the district under survey. Much of the information received, has been incorporated with this Report ; other matter, which could not well come in ; which those who communicated it, wished to continue in the form of notes, or which did not perfectly accord with my sentiments, still remains as notes. It is here proper to remark, that free use has been made of the Rural Economy of Yorkshire, the Survey of my predecessor MARSHALL, but never without acknowledgment, by marking what has been taken from that work, as quotations. MARSHALL is a native of the district under survey, and having spent much of his life in it, is well acquainted with every local circumstance : these he has so fully and so perspicuously detailed, that it would prove a vain attempt in another to describe the same circumstances in other words ; for they could not be rendered equally satisfactory to the public : his
words

words have, therefore, been made use of; and, it is hoped, in a way that may not prove injurious to his valuable publication.

I cannot conclude, without expressing the pleasure I experience, in reflecting on the willing assistance I received from those on whom I called in the course of my Survey, and the ready communication with which they, and many others to whom I sent copies of the Original Report, were pleased to favour me, and further the views of the Honourable Board in whose service I was engaged: they have left with me a lasting impression of gratitude and respect. Sensible as I am, of my own inability to do justice to the subject, I submit, with deference, this Survey to the candid judgment of the Board and the Public, trusting that they will receive with indulgence, this humble attempt at promoting the improvement and cultivation of the country; to which, should I have contributed in the smallest degree, or come up to the expectation of the Honourable Board, I shall feel much recompensed for the labour, the time, and the pains bestowed on the subject.

JOHN TUKE.

*Lingcroft, near York, }
2d Month, 1799. }*

CONTENTS.

CHAPTER I.—GEOGRAPHICAL STATE AND CIRCUMSTANCES.

	PAGE
SECT. 1.—Situation and Extent	I
2.—Divisions	ib.
3.—Climate	3
4.—Soil and Surface	7
5.—Minerals	17
6.—Waters	23

CHAPTER II.—STATE OF PROPERTY.

SECT. 1.—Estates, and their Management	28
2.—Tenures	31

CHAPTER III.—BUILDINGS.

SECT. 1.—Houses of Proprietors	32
2.—Houses and Offices of Yeomanry and Farmers	ib.
3.—Cottages	41

CHAPTER IV.—MODE OF OCCUPATION.

SECT. 1.—Size of Farms, and Character of Farmers	47
2.—Rent	49
3.—Tythes	50
4.—Poor-rates	ib.
5.—Leases	55
6.—Expence and Profit	76

CHAPTER V.—IMPLEMENTS.

	PAGE
Carriages	78
Thrashing Mills	81
Winnowing Machines	83
Ploughs	ib.
Gripping Spade	84
Drills	85
Harrows	ib.
Quicking Drag	ib.
Stubble Rake	87
Hay Sweep	88

CHAPTER VI.—INCLOSING, FENCES,
GATES.

	90
Fences	91
Gates	98

CHAPTER VII.—ARABLE LAND.

SECT. 1.—Tillage	101
2.—Fallowing	104
3.—Rotation of Crops	107
4.—Crops commonly cultivated: their Seed,	
'Culture, Produce	110
Wheat	ib.
Rye and Meslin	117
Barley	118
Oats	120
Beans and Blendings	128
Peas	130
Rape	ib.
Turnips	144
Potatoes	149
Red Clover	155

SECT.

CONTENTS.

xiii

	PAGE
SECT. 5.—Crops not commonly cultivated. -	157
Ruta-baga, or Swedish Turnip - -	ib.
Weld - - - - -	159
Flax - - - - -	ib.
Sainfoin - - - - -	161
Tobacco - - - - -	163
Vetches and Lentils - - - - -	165
Mustard - - - - -	ib.
Teasles - - - - -	166

CHAPTER VIII.—GRASS.

SECT. 1.—Natural Meadows and Pastures -	168
2.—Artificial Grasses - - -	170
3.—Hay Harvest - - - - -	173
4.—Feeding - - - - -	178

CHAPTER IX.—GARDENS AND ORCHARDS.

- - - - -	180
-----------	-----

CHAPTER X.—WOOD-LANDS.

- - - - -	182
-----------	-----

CHAPTER XI.—WASTES, AND THEIR IMPROVEMENT.

- - - - -	197
Improvement of Waste Lands - - -	202

CHAPTER XII.—IMPROVEMENTS.

SECT. 1.—Draining - - - - -	221
2.—Paring and Burning - - - - -	225
3.—Manuring - - - - -	232
4.—Weeding - - - - -	239
5.—Watering - - - - -	240

CHAP-

CHAPTER XIII.—LIVE STOCK.

	PAGE
SECT. 1.—Cattle	247
2.—Sheep	260
3.—Horses	273
4.—Pigs	282
5.—Rabbits	283
6 and 7.—Poultry and Pigeons	ib.
8.—Bees	284

CHAPTER XIV.—RURAL ECONOMY.

SECT. 1.—Labour	285
by the Piece, 1793	287
Servants by the Year	ib.
2.—Provisions	290
3.—Fuel	293

CHAPTER XV.—POLITICAL ECONOMY,
AS CONNECTED WITH, OR AFFECTING AGRICULTURE.

SECT. 1.—Roads	295
Bridges	304
2.—Canals	305
3 and 4.—Fairs, and Weekly Markets	306
5.—Commerce	310
6.—Manufactures	311
7.—Poor	314
8.—Population	319

CHAPTER XVI.—OBSTACLES TO IMPROVEMENT:

INCLUDING GENERAL OBSERVATIONS ON AGRICULTURAL LEGISLATION AND POLICE.

321

CHAP-

CHAPTER XVII.—MISCELLANEOUS OBSERVATIONS.

	PAGE
SECT. 1.—Agricultural Societies	336
2.—Weights and Measures	ib.

CONCLUSION.

Means of Improvement, and the Measures calculated for that Purpose	338
Estates	ib.
Cultivation and Crops	340
Potatoes	343
Sainfoin	ib.
Scale of Cultivation for 100 Acres of light Soil	344
Scale of Cultivation for 120 Acres of heavy Soil	346
Draining	348
Irrigation	ib.
Fences	ib.
Cattle	349
Sheep	350

APPENDIX.

Open Fields	352
Water Cisterns	353

CHAPTER XVII. MISCELLANEOUS OBSERVATIONS.

PAGE

335

336

SECT. I.—Agriculture and Horticulture

2.—Weights and Measures

CONCLUSION.

337

Means of Improvement, and the Progress of the Nation

338

339

340

341

342

343

344

345

346

347

348

349

350

351

352

353

354

355

356

357

358

359

360

361

362

363

364

365

366

367

368

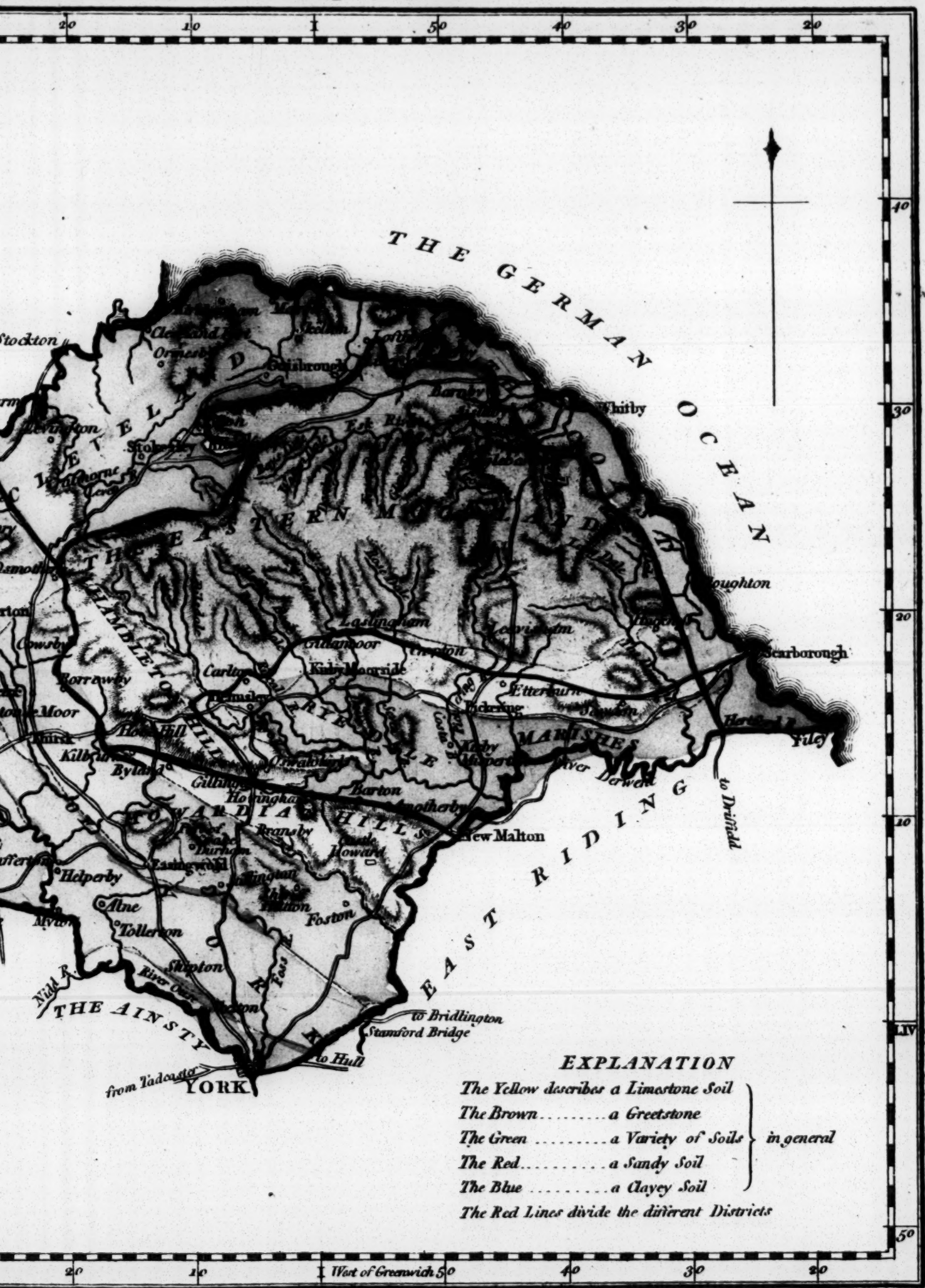
369

370

371

372

ACCOUNT of the North Riding of Yorkshire .



AGRICULTURAL SURVEY
OF THE
NORTH RIDING OF YORKSHIRE.

CHAPTER I.
GEOGRAPHICAL STATE
AND CIRCUMSTANCES.

SECTION I.—SITUATION AND EXTENT

THE North Riding of the county of York is situated between $53^{\circ} 57'$ and $54^{\circ} 38'$ north latitude, and between $0^{\circ} 19'$ and $2^{\circ} 23'$ west longitude of Greenwich. It is bounded by the county of Durham on the north, the German Ocean on the north-east, the East Riding on the south-east, the Ainsty of York and the West Riding on the south, and the county of Westmoreland on the west, as the map hereto annexed will sufficiently shew. The length of the Riding from east to west is eighty-three miles, the breadth from north to south is forty-seven miles, and it contains about $2048\frac{73}{100}$ square miles, or 1,311,187 acres; of which about 442,565 are uncultivated; the remainder comprehends the inclosed lands, open fields, woods, and roads.

SECT. II.—DIVISIONS.

THE Riding is subdivided into twelve wapontakes, viz.
Gilling west, Gilling east, Allertonshire, Langbargh,
A Pickering

Pickering lyth, Whitby strand, Ryedale, Birdforth, Bulmer, Hallikeld, Hang east, and Hang west; and contains twenty-one market towns, namely, Askrigge, Bedale, Coxwold, Easingwold, Guisborough, Hawes, Helmsley-Blackmore, Hovingham, Kirby-Moorside, Leyburn, New Malton, Masham, Middleham, North-Allerton, Pickering, Richmond, Scarborough, Stokesley, Thirsk, Whitby, and Yarm; of these, New Malton, North-Allerton, Richmond, Scarborough, and Thirsk, send two members to parliament each.

As the climate, soil, and surface of the country are various, I have divided the whole into six districts, each remarkable either for its climate, soil, surface, or minerals; and distinguished each by the name by which it is usually known; or, where names are wanting, I have given them such as are descriptive of their situation and circumstances; the names and quantity of acres of each division are as follow, and the extent and situation of each, are particularly described in the map.

	Cultivated acres.	Uncultivat- ed acres.
The coast - - - -	64,920	
Cleveland - - - -	70,444	
The vale of York, with the Howardian hills, &c. }	441,386	15,000
Ryedale, with the East and West Marishes }	100,437	3,435
The Eastern Moorlands - -	102,000	196,625
The Western ditto - - -	90,000	226,940
	869,187	442,000

Total quantity of the North Riding 1,311,187 acres.

SECT. III.—CLIMATE.

THE climate of the coast, from its situation, is cold and bleak ; but in some of the vales, which are sheltered both from the westerly winds and the sea air, corn ripens well.

Cleveland having the Eastern Moorlands to the south of it, the sea to the north and east, and lying open on the west to the winds from an extensive, uncultivated, and mountainous country, is of course subject to a chill and severe climate ; but the soil, become dry and very stiff by a long state of aration, and the frequent use of lime, bakes with the heat of the sun, and hastens harvest to the time of warmer climates.

The extensive vale of York, or vale of Mowbray, as formerly called, has the moorlands on each side, except where it opens into Cleveland, or is separated from Ryedale by a range of hills called (by MARSHALL, in his Rural Economy of Yorkshire) the Howardian hills ; the climate of those parts near the moors is of course cold, from their exposure to them, and increased elevation ; but in other parts is mild and temperate.

The climate of the Howardian hills, particularly of the west end, from its vicinity to the Eastern Moorlands, and greater elevation, is cold, and the corn rather late in ripening, but that of the eastern end much more mild.

The climate of Ryedale, and the East and West Marishes, is mild, and in many parts favourable to the production of crops in an extraordinary degree ; but the healthiness of it must be considerably affected by the want of a better drainage.

The great altitude of the Eastern Moorlands, renders the climate extremely cold and bleak, which will always be a bar to their improvement ; little corn, but oats or big (properly winter barley, though here sown in spring), is

sown in the higher part of the country, or of the dales which penetrate these moors, and it frequently happens that the crops are cut long before they are ripe, and are still in the field when the ground is covered with snow; yet grain of different kinds will ripen tolerably well, if sown in a pretty good situation or aspect*.

The

* The highest of these hills is about 1444 feet above the level of the tide, an altitude which between latitudes 54° and 55° is greatly above that in which grain of any kind will ripen. I have frequently observed on these hills, that where grain is sown at an elevation of about 600 feet, the crop becomes extremely uncertain; that may be reckoned the greatest height at which wheat will grow, with any chance of repaying the husbandman for his labour, and there the grain will prove very light, and about a month later in ripening than if sown at the foot of the hills; between that and 800 feet may be reckoned the maximum of elevation for any other grain; between 600 and 800 feet, in backward seasons the produce will be little worth, and sometimes not approach maturity; and in other seasons it may be late in October before the ground may be cleared; and frequently before that period, heavy showers of snow will have fallen, and sometimes while the crop may be still standing, such showers the people who inhabit the dales of these Moorlands always expect, and in their expectations are rarely deceived, during harvest. But in speaking of these heights, we must not look for mathematical accuracy; aspect and soil will make considerable difference, for which allowances must be made; a sheltered, warm situation may hasten vegetation, and bring a crop to proper maturity at an height greater than the above; or a warm, dry soil, may have the same effect. The Wolds hills in the East Riding, which are entirely of chalk, range parallel with these Moorlands only a few miles from them to the south, and every where within sight of them; their north-eastern extremity probably (for it does not appear that their height has ever been taken), does not exceed, nor is much less than 600 feet; there the crops ripen well and in good season, and above a month sooner than at the same elevation on the Moorland hills, and are productive in proportion to the labour bestowed on them, or the fertility of the soil on which they grow; but the Wolds hills, however exposed they otherwise may be, experience the benefits arising from the warmth of a calcareous soil; while the others are every where covered with a cold surface of tenacious clay on a gritstone or vitrescent rock. About the end of August the clouds begin to descend, and in the form of dense fogs, almost amounting to heavy rains, impinge in a morning against these hills, according to the course of the wind, at an elevation of about 700 or 800 feet, and as they become rarified by the warmth of the day, either ascend above their summits, or remain upon them at an elevation in proportion to their rarefaction; as the autumn approaches, they hang in a morning lower on the hills, and leave their summits clear occasionally only, and then but for a short time; from that

The climate of the Western Moorlands (which are a part of that long range of mountains extending northward from Staffordshire, through Derbyshire, Yorkshire, Lancashire, Westmoreland, and Cumberland, into Scotland), is colder than that of the Eastern Moorlands, the altitude being much greater, but not less favourable on that account, to vegetation, in consequence of their being generally calcareous ; the Western Moorlands are much more liable to rain, and being much more lofty, and not exposed like the Eastern, to the sea air, the snow lies much longer upon them.

The general character of the climate of the North Riding, like that of all the counties bordering upon the German Ocean, is that of dryness throughout the year, and of peculiar coldness during the first half of it, when the prevailing winds are from the eastern points of the compass ; they set in with the regularity of a monsoon about the end of February or beginning of March, and continue with almost uninterrupted drought, and uniform severity till the middle of May, and frequently later ; about that time, however, their violence begins to abate, the west winds then entering into conflict with them, but not entirely prevailing over them, till the near approach of July. About the middle of May the west winds will blow for an hour or two in the morning, to be mastered at that time by the superior powers of the east ; in about a month the east wind will only be perceptible for an hour or two in the afternoon, and will then, perhaps, not penetrate the country above twenty or thirty miles ; soon

that period during several months, this country is enveloped in fog, chilled with rain, or locked up in snow from about an elevation of 600 feet, with little interruption. A region so little favoured by nature, must be ill calculated for cultivation ; but sheep and cattle may be reared upon it, and industry and capital may convert many extensive tracts, now covered entirely with dreary heath, into fields productive of plentiful herbage.—*W. S.*

after which time it gives way to the more powerful current of the west. The conflict of these two winds is remarkably uniform; their point of contact may be often perceived, and is usually attended with a few drops of rain; during this conflict, and for some time afterwards, while the wind on the surface of the ground is blowing from the west, an opposite current may usually be observed aloft, passing with considerable velocity; to this current in the upper regions, may probably be attributed the almost constant rains that fall on the Western Moorlands; the clouds from the Atlantic pushed forward by the westerly winds, which prevail as uniformly throughout the year on the western coast of this island, as the opposite winds prevail on the opposite coast during a great part of it, are there stopped in their course by the powerful resistance of the easterly winds, as well as by the mountains that arrest their progress, and there fall in almost unceasing rains. These easterly winds during the months of March, April and May, are usually attended by a bright sun in the day time, with sharp frosts during the night, and frequent showers of snow and sleet; the united effects of such contrariety of weather is to parch the surface of the ground, to scorch the tender vegetation of the season, and almost totally to arrest its progress; frosts sometimes occur even in June, cut off that which is farther advanced, and greatly injure the crops: till June vegetation lingers in its progress in the district under survey, unless in sheltered situations, or under other favourable circumstances*.

SECT.

* The Surveyor frequently advertised in the newspapers circulated in this country, in hopes of procuring such meteorological journals as might have been kept in this district; but no notice having been taken of his advertisements, there is reason to suppose that none have been kept, or not kept with such accuracy as the observers thought would render them worthy of publication; the following, therefore, for want of a more accurate one, must be regarded rather as an approximation, than a register fully to be relied upon:

SECT. IV.—SOIL AND SURFACE.

THE soils of the coast are a brownish clay, a clayey loam, a loam upon a strong clay, a lightish soil upon an alum shale, a loam upon a freestone, or, as it is here called,

as far as it went, it was taken with sufficient care, and under every favourable circumstance, but a considerable number of days in the course of the two years, passed over without any observations being taken, though seldom above a few days at any one time; these, perhaps, may not make much difference in the amount of the *mean*, and the calculations were made, such days being deducted. The place where the observation was made, was near the centre of the North Riding; the thermometer, inclosed in a glass tube, was hung out of a window in a north-east aspect; and the bowl of the barometer was found, by a series of observations, to be about 34.8 feet above the level of the tide.

1790 and 1791.	Hour.	THERMOMETER.			BAROMETER.		
		Highest	Lowest	Mean.	Highest	Lowest	Mean.
January	8 A.M.	47 °	22 °	39 4	30 1	28 4	29 2
	3 P.M.	48 °	32 °	41 1	30 0	28 4	29 2
February	8 A.M.	50 °	29 °	37 1	30 3	28 9	29 8
	3 P.M.	50 °	30 °	43 0	30 3	28 9	29 7
March	8 A.M.	52 °	30 °	40 0	30 5	29 5	30 1
	3 P.M.	60 °	39 °	46 4	30 5	29 4	30 0
April	8 A.M.	54 °	38 °	45 7	30 0	28 9	29 5
	3 P.M.	64 °	40 °	50 2	30 2	28 9	29 6
May	8 A.M.	62 °	42 °	53 6	30 2	29 1	29 8
	3 P.M.	72 °	46 °	60 2	30 2	29 1	29 7
June	8 A.M.	66 °	48 °	57 6	30 0	29 5	29 8
	3 P.M.	76 °	52 °	62 3	30 0	29 4	29 8
July	8 A.M.	64 °	54 °	59 4	30 0	29 3	29 7
	3 P.M.	76 °	60 °	65 9	30 1	29 2	29 7
August	8 A.M.	69 °	53 °	59 0	30 3	29 3	29 8
	3 P.M.	78 °	52 °	65 0	30 2	29 4	29 8
September	8 A.M.	63 °	46 °	53 9	30 3	29 0	29 8
	3 P.M.	70 °	52 °	59 3	30 2	29 2	29 8
October	8 A.M.	55 °	32 °	45 0	30 4	28 6	29 7
	3 P.M.	63 °	42 °	50 6	30 4	28 6	29 7
November	8 A.M.	48 °	25 °	40 4	30 3	28 7	29 7
	3 P.M.	53 °	40 °	46 2	30 2	29 0	29 7
December	8 A.M.	44 °	16 °	31 5	30 2	28 8	29 4
	3 P.M.	50 °	24 °	35 5	30 2	28 8	29 5
Whole Year	- -	-	-	46 9	-	-	+29 6
Mean of Morn. & Aftern.	-	-	-	49 5	-	-	+29 6

From the above table, and the observations from whence it was formed, it appears that the greatest height of the thermometer in two years was 78° in August 1791, and the least height at 8 A. M. 16°, on Dec. 12, 1791; and the least height observed in the twenty-four hours 15°, on Dec. 16th at midnight, in

called, a gritstone*, and in some vallies west of Whitby, a deep rich loam.

The

the same year; that the mean of morning and afternoon in those two years was $49^{\circ} 5'$; that the mean of the hottest month, July, was $+62^{\circ} 6'$, and of the coldest, December, was $33^{\circ} 5'$;—that the greatest height of the barometer, was $30^{\circ} 5'$, in March, and the least height was $28^{\circ} 4'$, in January; that the least mean height was $29^{\circ} 2'$ in that month also; and that $+29^{\circ} 6'$ was the mean of the two years. Where the mark of +, or —, is added, it denotes that the amount was somewhat greater or less than the annexed figures imply, minute fractions less than $\frac{1}{2}$ being omitted. That these thermometrical observations are tolerably accurate, is sufficiently indicated by the mean height as taken in different latitudes; the mean height at 8 A.M. and 2 P.M. in London* in 1790 and 1791 being $+50^{\circ} 8'$; at Lyndon† in Rutlandshire, about $1^{\circ} 5'$ north of it in 1790 and 1792 (the observations in 1791 being incomplete) — $49^{\circ} 8'$ at the place of making these observations, about $1^{\circ} 44'$ north of Lyndon, at 8 A.M. and 3 P.M. $49^{\circ} 5'$; and at Edinburgh‡, lat. $56^{\circ} 57'$ north, at sun-rise and noon, on a mean of eight years, from 1785 to 1792 inclusive, $47^{\circ} 1'$; but as sun-rise is the coldest, and noon not the warmest time of the day, it may be necessary to add about 1° to bring this to an equality with the above observations, making it $48^{\circ} 1'$, which difference of one degree, will be about the due proportion for the more northern situation. These several observations, not only prove the accuracy of the one here inserted, but prove the accuracy of each other, by their regular gradation in proportion to their latitudes.

For the same reasons that the above observations can be only looked upon as approximations to truth, must the observations on the course of the winds be also regarded; but it is probable that the following is about the proportions of each which prevail in the district under survey.

North	- - - - -	17
From the easterly points	- - - -	138
South	- - - - -	14
From the westerly points	- - - -	196
		365 Days

In making the above table, three o'clock P. M. was the hour of observation; and such winds were called north, that did not vary more than $11\frac{1}{4}$ degrees from the north point, that is, more than N. by E. and N. by W.: and so of the south: were south and north omitted in the above table, then the winds from east would blow about 153 days, and from the west points 212 days.

No account of the quantity of rain that falls in this district appears to have been taken.—W. S.

* Gritstone (perhaps derived from granite-stone) is a silicious or vitrescent stone, chiefly composed of particles of sand and flint, and is the opposite to a calcareous,

* Philosophical Transactions for 1791, 2, 3, 4.

† Ditto ditto, for 1791, 2, 3, 4.

‡ Agricultural Survey of Mid-Lothian, p. 22.

The surface is hilly and bold, and the cliff of the coast generally from 50 to 150 feet in height, the foot of which is in some parts always washed by the sea, and in all parts at high tides; from this cliff the country generally rises very rapidly in the space of from half a mile to a mile, to the height of from 300 to 400 feet.

The soil of Cleveland is generally a fertile clay, with some clayey loam and fine red sandy soil, the last of which is chiefly to be met with betwixt Marsk and Worsall, and about Lavington and Crathorne, near the moors; in the neighbourhood of Kildale there is a good deal of deep rich loam.

It is lightly featured with hills, and has few fields, except near the sea, which have not a gentle slope.

This district is divided from the Western Moorlands by a range of cliffs, whence it probably derives its name. The loftiest of these lying near their north-western extremity on the top of, but eastern side of Bilsdale, have been lately proved by barometrical observations to bear an elevation of 1444 feet above the level of the tide at high water, which is here about fourteen miles distant; but far the greatest part of this height arises from a sudden and abrupt descent into Cleveland, which viewed from the summit, appears to extend like a level plain to the sea.

To describe the soils of the extensive vale of York, it will be necessary, on account of the great variety of them, and for the sake of accuracy, to traverse the country, and describe the soils in each part.

The level land near the river Tees consists in general of a rich gravelly loam.

calcareous, or limestone. Gritstone, as called by the masons here, is generally this same vitrifiable stone composed of coarser particles, and freestone the same kind of stone composed of finer particles, and working more freely—the more valuable stone for elegant buildings, or the ornamented parts of them.

Upon

Upon the high ground on the west side of the road leading from Catterick to Peirse-bridge, the soil is for the most part strong, and generally fertile, but in some places cold and springy: some fine hazel loam is also to be met with.

On the right of the road leading from Greta-bridge to Catterick, is much fine gravelly soil, with a considerable quantity of clay, and some peat; and, on the north of Richmond, a mixed loamy soil in most places upon limestone, but in some, upon a freestone most excellent for building.

On the east side of the road between Catterick and Peirse-bridge, there is some cold thin clay upon what is here called, a moorband*; there is also some gravelly and some clayey loam, part of which is cold and springy.

About Barton, Melsonby, and Middleton Tyas, the soil is loamy upon limestone. About Halnaby, and from thence in an easterly direction, to the edge of Cleveland, and betwixt the Wiske and the Eastern Moorlands, as far south as Borrowby and Thornton-le-moor, the soil for the most part is a cold clay; though in some places less tenacious soils mixed with considerable quantities of large cobble-stones, or pebbles, of various kinds, are to be met with.

On the west side of the road betwixt Richmond and Leeming, a good gravelly soil prevails; towards Hornby, a good gravelly clay; at Langthorn, a good sandy loam and some peat.

The land on both sides of the brook which runs from Constable Burton past Bedale, consists for the most part of a rich loam, but in some places intermixed with a large quantity of cobble-stones and coarse gravel.

* This stratum, which is from six inches to a foot thick, is of a ferruginous, ochreous appearance, probably containing much iron, and wherever found is attended with great sterility.—J. T.

The country betwixt the above-mentioned brook and the West Riding, and on the west side of the road from Borough-bridge to Leeming, is generally a turnip soil, though of various qualities, consisting of a loamy soil upon limestone, a gravelly loam, and a rich hazel loam; except that in some parts there are patches of swampy ground, and cold clay land. That corner of the vale east of Middleton Tyas, and west of the Wiske, and north of a line drawn from Scorton to Danby Wiske, is mostly cold and wet, some of which has a moorband under it; but on the west side of this tract there is some clayey loam of pretty good quality, and a little excellent gravelly loam, which last is chiefly employed as grazing ground.

On each bank of the river Swale, and between that river and the Wiske, and south of Scorton and Danby Wiske, to the junction of the Ure and Swale, is a very fertile country; consisting of rich gravelly loam, and some fine sandy soil, with, in some places, very good clay soil, of the last of which the country, for a few miles north of Pickhill, chiefly consists; nevertheless, there are some patches of cold clay soil, and also a little peat here and there scattered through the whole of this part of the district. On the banks of the Swale are many very rich grazing grounds.

For a few miles north of Thirsk, there is some fine rich strong loamy land.

On the north-west side of Thirsk begins a vein of sandy soil, which runs betwixt the rivers Swale and Ure until it comes within about ten miles of York; where leaving the river, it passes York a few miles to the north, and extends to the river Derwent; it is in most places four or five miles broad, and in general leaves only a narrow strip of rich grazing ground adjoining the rivers Swale and Ure. About Myton, Brafferton and Helperby,
the

the sand is of a dark colour, and remarkably fertile ; but in general this sandy tract is barren and wet, a considerable part of it lying very flat, and on a substratum through which the water cannot drain off. About Ship-ton and Skelton, fine sandy loam prevails ; but on each side of York (south of the sandy tract, and to the boundary of the Riding) is a good strong clay or loamy soil.

The country between the above-described sandy soil and Hambleton, from Easingwold to Thirsk, is in general a strong retentive clay, in some places full of cobble-stones, with a little good loam upon limestone, some fine sandy soil, and wet springy sand occasionally intermixed. Near the rivulets the soil is in general strong, upon a strong bed of gravel.

The country betwixt the tract of sandy soil above described and the Howardian hills, is in general level, the soil varying in all degrees from a strong clay to a sand ; the clay in some places good, in others poor, thin and cold : near the Derwent is some fine loamy soil.

The surface of this vale, from the river Tees at the head of it, has a general slope, though interrupted with some irregularity of surface, and some rather bold swells, quite to York, where it sinks into a perfect flat.

The soil on the west end of the Howardian hills, a high and bold range running from east to west, and dividing the vale of York from Ryedale, is mostly a good strong loam upon a clay mixed with cobble-stones ; about Gilling, and towards Bransby, it is thin and poor, in most places near to a grit, though in some to a limestone rock ; but on the southern side of these hills, a good clay and loamy soil prevails. From Bransby to Sheriff Hutton, the soil is generally a rich clayey loam. The valley on the north side of Sheriff Hutton consists of a clayey loam upon a bed of strong gravel, and lower down has some peat.

The

The hills rising from the northern side of that valley, are mostly of a rich strong soil ; but on their north-eastern extremity quite to the Derwent, the soil is light and fertile upon a limestone rock. The northern verge of these hills is of a thin loamy soil, in some places rather sandy, in others gravelly upon a limestone rock or rubble.

Ryedale, with the East and West Marishes, form one vale, Pickering beck dividing Ryedale from the Marishes.

The surface of the lower parts of Ryedale is flat, and a large proportion of it, probably not less than 7000 acres, liable to be flooded, the waters being much retarded by the extreme curvature of the river, and kept up by a mill of little value at Newsham, and still more by those at Malton, which raise the water ten feet and four inches. The bridge at Kirby Misperton also contributes much to keep up the floods ; it has only one arch, which is quite insufficient for admitting the sudden torrents which rush from the moors after heavy rains : an additional arch might be built at a very moderate expence. In general, the Rye, as well as the smaller streams falling into it, have been embanked, but almost always injudiciously, not upon any regular plan, and without leaving sufficient foreshore ; the consequence has therefore been, that by contracting the passage for the water, the force, rapidity, and height of the stream have been greatly augmented, the probability of the banks breaking increased, and when broken, of doing additional injury, particularly in the summer time ; and, where both sides of the river have not been embanked, of throwing with increased power an accumulated weight of water on the opposite shore*. The flat of Ryedale is broken

* This might be remedied by cleaning out the bed of the river, and having flood-gates to take off the waste water both at Old Malton and New Malton mills ; there should also be flood-gates at Newsham mill, which drowns the country

broken by several insulated swells of considerable extent and elevation. On the north side of the dale the surface rises with a moderate ascent for three or four miles to the moors, which break down abruptly from it. The climate is mild, and favourable to the production of crops in an extraordinary degree.

The soil of Ryedale is various; at the foot of the northern margin is a hazel loam upon a clay bottom, or a deep warp or silt upon a gravel or clay; this warp is evidently washed down by the floods of many former ages from the higher country. These are soils of extraordinary fertility; some cold clay and yellow loamy soil mixed with sandy cobbles, of less fertility than the last, are in some places to be met with.

The detached swells are a rich strong clay, one excepted near Normanby, which is sandy.

The northern margin of the vale, is chiefly a deep loamy soil upon a reddish ill-formed stone, which will not burn into lime, and is not capable of being worked as free-stone; but under which is a limestone of extreme hardness, and much resembling the Derbyshire marble. Towards the eastern end of the margin, we meet with a sandy loam upon a gravel; as the moors are approached, the soil becomes less fertile and more stiff, though still upon limestone, and in some places it is a yellow sand.

The soil of the Marishes is chiefly clay, with some sandy loam, gravel and peat; the whole very low and very wet, in consequence of the river Derwent being very crooked, much choked, insufficient for the floods, and dammed up, as above-mentioned, by the mills at Malton, in consequence of which about 3500 acres in the North

country with back-water for many miles, particularly Siingsby Car, Salton and Brawby Ings, Muscoat Ings, Edstone Ings, Butterwick and Holme low grounds, and Sir B. Graham's estates as far as Stonegreave.—*E. Cleaver, Esq.*

Riding,

Riding, and 7000 acres in the East Riding, which, if properly drained, would be very valuable, are greatly injured, or rendered totally useless.

The wild and extensive tract of mountains called the Eastern Moorlands, which occupy a space of about thirty miles by 15 or upwards, is penetrated by a number of fertile cultivated dales. The surface of some of the higher hills is entirely covered with large freestones; on others beds of peat, which in many places are very deep (frequently not to be passed, and never without danger) extend themselves to a great distance; the produce of which is always ling (*erica, tetralix, vulgaris, et cinerea*), but in some places mixed with bent (*juncus bulbosus*) and rushes (*juncus effusus*). Near to the old inclosures, some considerable tracts of loam, and sandy soil, producing furze (*ulex Europæus*) fern, here called brakens (*pteris aquilina*) thistles, and coarse grass, with but little ling, are to be met with. But wherever ling is the chief produce, the top soil is invariably black moor or peat, of a firmer texture than in others. In the subsoil is considerable variety: in some places a yellowish, in others a reddish clay occurs; a loose red freestone rubble upon either a rock or clay, is very common; in some places a kind of rotten earth inclining to peat*, and also a hard cemented reddish sand, and a grey sand are found. The basis of all this district is invariably a freestone.

The western end of these moorlands, which is called Hambleton, is very different from those above described; it is generally a fine loamy soil upon a limestone rock, producing large quantities of coarse grass and bent; in some parts, particularly towards the south-east point, mixed with some ling.

* Where this subsoil is found, the ling is very large and strong, mixed with bent and very luxuriant rushes.—J. T.

The cultivated dales situated amongst these moors are pretty extensive; some of them containing from five to 10,000 acres, and Eskdale and Bilsdale much more; the level land at the bottoms of the vales is seldom more than 200 or 300 yards in breadth, but the land is generally cultivated from half a mile to a mile and a half up the hills, though the surface is in many places very irregular.

Most of the dales partake more or less of the following soils: a black moory earth upon a clay, a sandy soil, in some places intermixed with large gritstones, upon a shale, and a light loam upon a grit rock. In the neighbourhood of Hackness, on the eastern part of the moors, we find in some instances, on the sides of the hills, a somewhat stiff loam upon limestone, and a deep sandy loam upon a whinstone; in the bottoms, a light loam upon gravel or freestone.

The Western Moorlands differ materially in their produce from the Eastern Moorlands; instead of black ling, we find many of the mountains covered with a fine sweet grass: others with extensive tracts of bent; some produce ling, but it is mostly mixed with a large portion of grass, bent, or rushes. The soil in the lower parts of these moors is a fine loam, in many places rather stiff, upon a hard blue limestone. The bent generally covers a strong soil lying upon grit or freestone rock; the black ling a reddish peat upon a red subsoil, or in many places a loose grit rubble, beneath which is a grit rock.

Many of the dales which intersect these moors are very fertile, of which Wensleydale may be ranked the foremost, both for extent and fertility; the bottom of it consists of rich grazing grounds, through which the river Ure takes a very serpentine course, forming in many places beautiful cascades. From the bottom of the valley the hills rise with a moderate slope, though with a very
irre-

irregular surface, to an amazing height, and are inclosed for a mile or a mile and a half from the river. On the south side of the dale several small dales open into the larger.

The soil of Wensleydale, on the banks of the river, is generally a rich loamy gravel; on the sides of the hills a good loam, in some places a little stiff, the latter of which upon a limestone is predominant; some clay and peat also occupy a part of them.

Swaledale is next to Wensleydale in extent, but falls far short of it in beauty, the bottom of it being narrow, and the hills steeper than in Wensleydale, but the soil is in some parts not much inferior in fertility; in the lower parts a rich loam prevails, which is in some places gravelly; on the hill sides a thin loam upon grit, under some places upon limestone; some clay and peat moss are also met with.

The other dales, though much smaller than those above described, are very similar to them in their soils, and several of those whose streams empty themselves into the river Tees, are very fertile.

SECT. V.—MINERALS.

THE coast and Cleveland abound in all their hills with inexhaustible beds of alum strata, and works for procuring this salt are carried on in several parts of them, and are supposed to be the only works of the kind in this island; pyrites is found in considerable quantities in all the alum mines, and copperas was* formerly extracted from it in most of the alum works; but as much coal is consumed in crystalizing the salt, and the pyrites is found with coal in Durham and Northumberland, the process is given over in this Riding, and removed thither.

* See *Magna Britania*, vol. vi. p. 644.

The Eastern Moorlands also produce alum, but the mineral either lies too deep, or is situated too far inland, to admit of being worked with profit.

Some seams of coals are worked in different parts of these moors; but they are thin, and their produce of an ordinary quality: the same may be said of those on Gill-ing moor, among the Howardian hills, the quality of which has not encouraged a diligent search after more.

Bilsdale, Brantsdale, and Rosedale, and probably some other of the dales, contain great quantities of iron-stone, though at present no use is made of it; but the vast heaps of iron-slag, and the remains of antient works, prove that much iron must have been made there in former times: nor are the appearances of the hearths where charcoal has been burnt every where scattered over these wooded dales, as well as in some places in the neighbourhood of which wood no longer remains, a less convincing proof that great quantities of charcoal have formerly been demanded in this country, which could have been applied to no other purpose; but at what time these works have been carried on, no record now remains to shew*.

The only place on these moors where any iron is now forged, is at Ayton, near Hackness, on the river Derwent; but the works are not considerable, and less so now than some years past.

* An inspeximus, dated at York, 26th February, 2d of EDWARD III. (anno 1328), recites the grant of a meadow in Rosedale, called Baggathwaite, to the nuns of Rosedale, by ROBERT de STUTEVILLE, which grant bears date at York 16th of August, 11th of JOHN (anno 1209); a confirmation of that grant by EUSTACHIUS de STUTEVILLE, excepta tantum modo forgea sua, and also a remission and quit claim of the same EUSTACHIUS to the said forge, ita quod eadem forgea penitus amoveatur & nullo hominum unquam reedificetur ad ipsarum monilium danaum seu nocumentum;—Dug. Monast. tom. i. p. 507. Edit. 1655.

Whence it is evident, that iron has been worked in Rosedale at a very early period; but whether it continued to be wrought in other parts of the dale, on the destruction of this forge, no where appears.—W. S.

In the neighbourhood of Whitby, some beds of ironstone are rented, and the produce carried to the works in the north, this ore being found, probably from being of a calcareous quality, very advantageous in fluxing the more obdurate ores there made use of.

In the vale of York, a bed of coal has lately been found between Easingwold and Thirsk, of sufficient thickness to admit of the erection of a fire-engine; the coals are, however, like all the rest in this Riding, heavy, sulphureous, and burning to white ashes; but are found very valuable for common domestic purposes, and for making lime, which abounds in the neighbourhood.

Veins of copper are supposed to be scattered about in several parts of the Western Moorlands and their vicinity; and a search is now making for that metal near Richmond, but with what prospect of profit, is not yet ascertained; ore, however, has already been got there; and some lately (1798) found in a gentleman's garden, very near the bridge in the town, has by an assay, proved to produce about 30 per cent. of metal of a very fine quality.

A vein of very rich copper ore was worked to great profit for some years at Middleton Tyas, but given up about forty years since, on some supposed disagreement among the proprietors. The clergyman of the parish is said to have received a considerable sum for copper found under the church-yard.

Upon the Western Moorlands are many lead mines, some of which have been, and others still are, very valuable; coals are also got in various parts of them, but not of better quality than those found in other parts of the Riding.

Freestone or gritstone of an excellent quality for building, is met with in many parts of the Riding, particularly on Gatherly moor, near Richmond, at Renton, near Borough-bridge, in the neighbourhood of Whitby, in all

parts of the Eastern Moorlands, and many of the Western; nor is limestone less abundant; the Western Moorlands in great measure consist of it; the Hambleton and Howardian hills almost entirely, and a long but narrow ridge, producing lime of a quality peculiarly excellent for agricultural purposes, extends for at least thirty miles along the southern edge of the Eastern Moorlands, exclusive of which, various insulated masses are to be met with scattered about the Riding.

In Coverdale, one of the smaller dales which penetrate the Western Moorlands, a stone slate is procured. The stone out of which it is riven, lies on a level with the water at the foot of the hill, on the western side of the dale, and is supposed to extend far under it in a stratum not more than three feet thick; this affords a tolerably good, but heavy covering, as far as the expence of land carriage will admit of the use of it.

A similar slate is also got in Pen-hill, lying between this dale and Wensleydale.

A slate somewhat resembling that which is usually called Westmoreland slate, but of a coarser texture, thicker, and of a more purple colour, is found in Swaledale; but the use of it does not extend far beyond the place which produces it.

Near the south foot of Hood-hill, under Hambleton-hills, is a bed of petrified matter two or three feet thick, and below that, a rock of remarkably hard porous limestone, of a light colour.

Marble of various kinds, some much resembling, and others superior, in closeness of texture and distinctness of colours, to that which is worked in Derbyshire, is found in many parts of the calcareous hills of the Western Moorland, but hitherto turned to no other purposes than those of making lime, or repairing the roads; though it is said

to have been heretofore raised for other purposes on the banks of the Tees above Romaldkirk*. Limestone also, on the northern margin of Ryedale, greatly resembles the marble of Derbyshire, is capable of receiving much such a polish, and is nearly of the same colour, mixture, and appearance.

In the vicinity of the river Greta, and in other places in the north-western extremity of the Riding, large blocks of a light red granite, much resembling that worked up by the antients, is to be found scattered over the face of the country, and in some places also, those of a light grey, but no use is known to have been, or is at this time, made of either.

Marl is met with in several parts of this Riding, but I do not find that it is at this time made use of, or ever has been, to any considerable extent†; on the subject of it, a letter has been received, of which the following are such extracts as relate to this Riding, it having been originally addressed to the members of the Society of Agriculture at Darlington, and the farmers of the county of Durham, and northern parts of the county of York.

* See *Magna Britannia*, vol. vi. p. 644.

† There are large marl pits at the roans, near Sheriff Hutton, upon the estate of Mr. BETHEL, and a very considerable quantity of land was improved by it about eighty years since; but by the neglect and inattention of the owner, in indulging the tenants to crop the land as they liked, the effect of it has been exhausted. There are also two large marl pits at Ganthorpe, near Castle Howard, the one in a field near the park gate; the other in a field called Taylor's Meadow. The marl at Ganthorpe is black, and lies deep. There is also a very fine blue marl in Bulmer Ox Pasture, which lies deep, and is to be dragged too much up hill to answer any valuable purpose.—*E. Cleaver, Esq.*

We have a great many different kinds of marl in this country, but the strata, as far at least as they have been sought into, are thin, excepting one of a whitish or yellowish kind, which yields a strong effervescence with common vinegar. I do not know that any sufficient experiments have been made in this neighbourhood, either of the quantity or the quality of the marl.—*William Sadler, Bolton-Hall, in Wensleydale.*

“ GENTLEMEN,
“ A Board of Agriculture having been lately established by Parliament, for the encouragement of collecting useful information both in England and Scotland, in every point that belongs to agriculture, or improvement of the various breeds of stock, I have taken the liberty of communicating the following hints for your consideration, that inquiries may be made, and experiments tried, by those that are interested in the particulars here specified.

“ From some observations I had made upon the banks of the rivers Tees and Swale, I had every reason to presume that clay-marl was to be found in both parts of the country. I shall therefore beg leave to mention, that the red, and dark blue marl, taken notice of in the subsequent part of this letter, are totally different from that kind of marl found between the strata of limestone at High Coniscliffe.

“ Proofs of clay-marl found in the North Riding of Yorkshire :

1. “ Upon the farm of Houghton, in the parish of Manfield, is a stratum of red marl.

2. “ At Lower Coniscliffe there is a stratum of white marl, upon the banks of the Tees.

3. “ At Stapleton ferry, near Darlington, there is a very fine marl, that appears to be of good thickness, under the gravel of the river Tees.

4. “ At the paper-mill near Richmond, upon the property of the Rev. Mr. THEAKSTONE, there is a rich marl of considerable thickness, which may easily be carried away by carts, the river Swale affording a proper water level for that purpose.

“ As this bed of marl is upon the south side of the river Swale, so a similar one is to be found upon the north

north side, at the worsted-mill belonging to F. M. TRAPPS, Esq. and immediately under Wycliffe wood, upon the banks of the Swale. The preceding are certain symptoms that there is a large field of it in the neighbourhood of Richmond. From the hints here given, it may therefore be traced and found out upon the bed of the Swale, and the low grounds adjoining.

5. "Upon the estate of the Rev. Mr. BLACKBURNE, near Richmond, there is an inexhaustible field of dark blue marl, close to the turnpike-gate on the road leading to Hipswell Lodge; and also near Bedale, marl has been found in one or two places.

"The advantages of marl, when laid upon land in tillage, or in grass, are well known in Norfolk, Lancashire, Berwickshire, and many other counties in Great Britain; every person may peruse the account of it, given in the works of Mr. ARTHUR YOUNG."

The Hon. and Rev. JAMES COCHRANE,
Rector of Manfield.

Gypsum is met with on each side of the river Swale, about Thornton-bridge, lying in veins of several feet in thickness, and in some parts, not more than four feet from the surface of the ground, and that through many hundred acres. It is at present only applied to the use of the plaisterers of the neighbourhood, though, were there a demand for it, it lies extremely convenient for conveyance in several directions, and might be procured at a very moderate expence.

SECT. VI.—WATERS.

THIS Riding, considering its magnitude, cannot boast of great extent of navigable waters, though the rivers and

streams (provincially becks) are very numerous, in consequence of so large a part of it consisting of a very elevated country, penetrated in almost every direction by vallies, each of which possesses its stream.

The principal of these is, first, the Ure, which rises near the borders of Westmoreland, and collecting, during its course through the beautiful dale of Wensley, many tributary streams, flows with a very rapid current for many miles within the North Riding. About three miles below Masham, it becomes the boundary of this Riding, dividing it from the West Riding, till it arrives at Ripon; thence it takes a circuit of a few miles into the West Riding, and again becoming the division between the two, so continues as long as it retains its name; this it loses about six miles below Borough-bridge, at the influx of an insignificant stream, that gives to the great river Ure its own name of Ouse, which at last, in its turn, is lost in that of the Humber. The Ouse continues to be the boundary of the North Riding, dividing it from the West Riding, and the Ainsty of the city of York, till its arrival at York, where it entirely quits the North Riding. The Ouse is navigable for vessels of 120 tons as far as York, where the spring tides would rise about twenty inches, if not obstructed by the locks about four miles below, and would be spent about six miles above. The Ure, with the aid of a short canal, is navigable for vessels of about 30 tons as far as Ripon, in the West Riding, where, on account of the rapidity of the stream, all prospect of navigation ceases.

The Tees rises between the counties of Westmoreland and Durham, beyond the north-west extremity of this Riding, and taking an easterly direction, divides it from the county of Durham through its whole extent, and is navigable

nable for vessels of thirty tons from the ocean to Yarm, where the spring tides rise seven feet.

The Derwent rises in the Eastern Moorlands within about four miles of the sea, and takes a southerly direction parallel to the coast, until it comes to the foot of the Wolds*; there it takes a west, and afterwards a south-west direction, and passes by the town of Malton, to which it is navigable from the Humber for vessels of twenty-five tons. It is the boundary between the North and the East Riding from its junction with the little river Hertford, till it arrives near Stamford-bridge, where it enters the East Riding.

The Foss, a small stream which rises near the western end of the Howardian hills, unites with the Ouse at York. It is supposed to have been a work of the Romans, executed for the purpose of laying dry an extensive tract of flat and very wet country, lying between the Ouse and Howardian hills; but if that were the original intention, it has long since ceased to be fulfilled, through the neglect of many ages, the course of the stream being almost entirely warped up. An act of parliament was, however, obtained in 1793, for restoring the drainage, and making a navigable cut from York to Stillington, a distance of about fourteen miles; this work was entered upon immediately after the passing of the act, and when finished, will be the only navigable water that penetrates the North Riding: whatever advantages it has heretofore enjoyed from navigation, being entirely confined to waters that flow on and constitute its boundary. In the present state of inland navigation in this kingdom, scarce another instance of a like extent of country thus circumstanced can be found †.

The

* An elevated and extensive range of chalk hills in the East Riding.—J. T.

† In a situation nearly central in the North Riding, where we are most plentifully supplied with streams of water in almost every direction, the want of

The Swale, the Esk, and the Rye, rise and flow for their whole course within the North Riding; though considerable streams, they are scarce capable of navigation, for having their sources in mountainous countries, they are shallow, rapid, and, as well as all the other rivers and streams in the Riding, except the Wiske alone, liable to sudden, violent, and frequent floods.—An act was some years since obtained, for rendering the Swale navigable as far as the vicinity of North-Allerton, with a branch up Cod-beck to Thirsk, and another up Bedale-beck to Bedale; but the navigation never was completed, either for want of money, or an injudicious expenditure of it.

The

of coal and water-carriage, I have long observed, are the greatest checks that agriculture has encountered. It perpetually operates as a conduit to drain this country of its money, and greatly impedes all its improvements.

Coals, indeed, are found in many parts of the Riding, but in general are so poor in quality, that the repeated experiments only tend to prove that the Riding contains little or no coal: or not in quantity or quality likely to be productive of any great advantage.

The inhabitants in general are extremely hurt by the expensive land-carriage of coals from the county of Durham. The produce of their lands is continually wasted upon the public roads; and a vast sum of money annually expended in their repairs, which otherwise would be laid out in local improvements; and agriculture suffers severely by the frequent absence of our servants and horses.

This is a loss sorely felt by the community; which I think might be easily remedied, and is worthy of immediate attention.

The Wiske runs into the river Swale in this place, and up the river Wiske a navigable canal might easily be effected, so as to communicate with the Tees somewhere between Croft-bridge and Yarm; and it has some years ago been fully ascertained, that a canal in the county of Durham might be brought down from the vicinity of the principal coal-pits to communicate by an aqueduct bridge over the Tees with the Yorkshire cut; by which means a vast country would be furnished with that chearing article at a moderate rate.

On this canal a wonderful weight would float. The ponderous carriage that passes over the several bridges of the Tees, from Durham into Yorkshire, is immense; and, beyond a doubt, the undertaking would pay amazingly.

The prospect of advantages to this country, to be derived from such a navigation, far exceeds any thing I am able to describe. Our servants and horses would be beneficially employed at home; less force of both would perform the farming business; and, as observed before, we should have coals of the best quality

The Cover, the Greta, the Wiske, the Leven, the Rical, the Dove, the Seven, the Costa, and a multitude of other streams with which this Riding is watered, serve only the purpose of turning a few insignificant mills.

It is observable, that the Rye, the Rical, Hodge-beck, the Dove, the Seven, and Pickering-beck, are all ingulphed during their passage through the narrow range of limestone hills which skirt the southern side of the Eastern Moorlands, and again emerge at their foot on the northern margin of Ryedale, after having been lost for the space of from half a mile to a mile and a half.

quality at a very easy rate. By this conveyance the Durham lead and lime, and Westmoreland blue slate, would pass into this, and adjoining counties, upon moderate terms; and I believe even the city of York, by a junction of the Wiske canal with the Swale, or by some other means, might be supplied with Durham coals at an easier rate than the inhabitants of that city are at present served with that article, and of a quality vastly superior.

By this navigation, our butter, cheese, and barley, would in return, go up by Darlington and Barnard Castle, into the dales and western country, and there always find a brisk and profitable market. The destruction of our principal roads (some of which, notwithstanding the high tolls, are in an insolvent state), would be prevented, and the public would derive innumerable advantages.

This idea of improvement is not novel; some gentlemen have, at different periods, had it contemplation, but after sparkling a while without a flame, it has ever vanished from the public view. I have for some time past ardently endeavoured to set this undertaking on foot, by placing it before several gentlemen every way equal to accomplish it; but still it wavers like the vapour of the night, and I cannot fix the lambent flame.

The business must of necessity originate in the county of Durham, and the principal inhabitants of that county, particularly the great proprietors of the lead and coal mines, are as much interested in the success of such a navigation, as the people of this country can possibly be.

The heavy land-carriage of this country must be eased, and coals brought down by a canal, in the line pointed out, or no general improvement in its agricultural system, can rationally be expected to take place: we shall still be condemned to struggle with difficulties rendered more afflicting by the knowledge of their remedies.—*M. G. Steele, Esq.*

CHAPTER II.

STATE OF PROPERTY.

SECT. I.—ESTATES, AND THEIR MANAGEMENT.

THE size of estates in this Riding is very variable; about one-third of it is possessed by yeomanry; the remainder of it is divided into estates of various sizes, from 500l. to 17 or 18,000l. per annum; to which last amount a single instance of an estate occurs, though it is thought no other nearly approaches it. Much the largest proportion of the dales of the moorlands is in the possession of yeomanry, rarely amounting to 150l. per annum.

Fortunately for the district under survey, the greatest part of the gentlemen of property reside constantly on their estates, and the rest during the greatest part of the year; many of these occupy considerable tracts of land, are skilful in the management of it, and attentive to introducing the improved practices of other countries, and liberal in the communication of the knowledge of them.

Perhaps few parts of England can boast of a greater number of gentlemen's seats than such parts of this Riding as are calculated for comfortable residence, nor a more general residence in them. The proprietors of many of these derive their estates from a long line of ancestors settled in this country: the names of BELLA-SYSE, CAYLEY, CHALONER, CHOLMELEY, CONYERS, CRAYTHORNE, DALTON, DANBY, FAIRFAX, FRANKLAND, GRAHAM, HOTHAM, MAULEVERER, METCALFE, MEYNELL, PERCY, SCROOPE, STAPYLTON, STRANGE-

STRANGEWAYS, STRICKLAND, TANCRED, WHARTON, WYVILL, and perhaps some others, are those of persons still proprietors of lands here, all of whom may be traced back as land owners, many of them owners of the estates they still possess, during several centuries, and some of them from a very early period of our history. The good effects of this general residence, is every where visible in the improved state of the country, in the advancement of agriculture, the repair of the roads, the regular administration of justice, the good order, the comfort, and general happiness of the people, and prosperity of the country; some estates might be named, and large ones too, that in the course of a few years witness an active management, and a state of improvement, hardly to be paralleled*. Resident

* It is necessary here to rectify a mistake which MARSHALL has committed, in his Rural Economy of Yorkshire, where he speaks of an estate in the vale of Pickering, in vol. i. page 19, 23 and 32, &c. as having been injudiciously raised, by which all confidence had been lost between landlord and tenant, and all spirit of improvement, and peace of mind in the occupier, destroyed. The reverse of all this picture is precisely the truth; the indulgent treatment he spoke of in a late owner, of allowing the tenants to *bequeath a farm to their relations, and sell the good-will of it to a stranger*, had the effect that might have been expected from such a system; the farm was lett several times over, from one person to another, each reaping some small profit; and while the landlord was receiving a small rent, the occupier was frequently paying an high one: to such proceedings the landlord wisely put a stop, by turning off the nominal tenant, and putting the occupier, where worthy of it, into possession of the farm, every where at a *very reasonable rent*. By this kind of tenure, Ireland is said to be ruined, and the same cause had the same effect here; for never was an estate occupied by a more beggarly crew than occupied this at the time alluded to. The people now in possession, are those then put into it, with no other than unavoidable changes; their rents are moderate indeed, and there is no want of confidence between the landlord and tenant; for it would be difficult indeed for the latter to find a more considerate, or more indulgent landlord; the tenantry are rich, the farms well cultivated, and an improvement has taken place during the time, perhaps unequalled in any other instance.—The mistake of MARSHALL may be accounted for and excused: he wrote soon after the change had taken place, when many in the neighbourhood were suffering in consequence of it, who were deprived of advantages they had reaped from letting their farm to others, and were at the time,

ident gentlemen generally attend to the improvement and management of their own estates, and no doubt experience the profit arising from such exertions. Other estates, and the estates of gentlemen not conversant with country affairs, must be left to the care of stewards and bailiffs, on whose integrity and knowledge must the profit of the owner, and the welfare and comfort of the tenant, depend. Not more than eight noblemen—the Marquis of CARMARTHEN, Earls FAUCONBERG, GRANTHAM, BEVERLEY, CARLISLE, Lords DUNDAS, MULGRAVE and BOLTON, have residences in this Riding, though many others have estates in it; the cultivation and improvement of these estates, may generally be estimated according to the length of time their proprietors reside on them. Those which are never visited by their owners, but abandoned to the care of a steward, perhaps a law agent, or other person still less acquainted with the management of land, and resident in London, are, as may naturally be expected, specimens of waste, neglect, barbarism, and poverty: fortunately, however, these examples are not numerous.

It is a common question to ask, whether the number of the yeomanry increases or diminishes; but so far as respects this Riding, there do not appear sufficient data on which to ground an answer; no contested election for the county has taken place for many years, which might in some degree be the means of ascertaining it. In a country like this, which is merely agricultural, I should suspect them to increase, in consequence of large properties having of late years been sold in parcels, and there being but few instances of gentlemen already possessed of considerable estates, making large purchases.

time; in consequent ill humour; and from such people he would get much of his information: were he to visit the country at this time, he would be satisfied that he had too hastily written his former account. —*W. S.*

SECT. II.—TENURES.

THE tenure of the country is freehold, with some few instances of copyhold property, and some of leasehold for 1000 or other long term of years, and some instances of leases for three lives, renewable at the fall of every life; these last are chiefly held under the church, or other corporate bodies; are seldom occupied by the lessee, who generally leases the whole estate at the place, but ~~are~~ farmed out again by him to others.

SECTION II.—TOWNS

CHAPTER III.

BUILDINGS.

SECT. I.—HOUSES OF PROPRIETORS.

AS the greater proportion of the Riding is possessed either by noblemen or gentlemen of upwards of 500l. per ann. there is of course a considerable number of elegant mansions belonging to both classes; to give a particular description of them would greatly exceed the limits of this work, and as they are not adapted to the purposes of agriculture, I shall pass them over, and speak only of

 SECT. II.—HOUSES AND OFFICES OF YEOMANRY AND FARMERS.

THOSE in Cleveland, on the borders of Leeming-lane, and from thence to the Swale, are better than in many parts of the Riding; those which have been built of late years, are mostly built with brick and tile, or in lieu of the latter, where the distance of carriage does not prevent, slate is used; but in other parts of the Riding, the farm-houses and offices are generally indifferent, and insufficient for their farms; the houses of a farm of from 100l. to 200l. per annum, in many parts, consisting only of a parlour, which has usually a bed in it, a house (which is the living room) and a back kitchen, on the ground-floor, and some very ordinary chambers open to the roof, which are mostly

mostly thatched with wheat or rye straw. The conveniences for their cattle are often no better than those for their families, and their fold-yards are generally badly constructed; sometimes the fold-yard has a fall to a pond to which it is open, where the cattle are solely supplied with water to drink; thus drinking the essence of their own excrements—a filthy neglect, that cannot but be injurious to their health. Where ponds do not exist, the drainings of the fold are turned into a ditch, which conveys it either into the town street, or along some hedge, where it is lost to the farm.

The houses, except those in the dales of the Moorlands, are too often situated in villages; the consequence of which is a general dispersion of the farm throughout the township, which causes much greater expence and labour than when the houses are centrically situated on the land which is occupied with them*.

In

* A great impediment to agriculture in the vale of York, where a great proportion of the ground is loam or clay, is the want of farm-houses and conveniences in the centre of the farms; and under-ground drains: the dwelling of the farmer ought, if possible, to be so placed; for none but men who are conversant with the true principles of farming, can sufficiently point out the great convenience and improvement resulting from such a situation.

Cast but an eye upon those places where the houses are situate in villages, and you will find the farms made up of separate fields, widely dispersed over the face of the township, and of course inconveniently intermixed with each other. This surely requires serious attention; but to promote this business effectually, the tax on common bricks and tiles should be so modified, as not to affect so heavily rural buildings and improvements.

For a moment let us consider who are the persons to whom the country in general owes its improvements? They are gentlemen who (according to the usage of good old times), have the sense and virtue to reside the greatest part of their time in the country upon their estates, chearing the inhabitants with their hospitality, and with the expenditure of most of their annual income amongst them; and the middle class of men, who occupy their own property, and being acquainted with the wants of the country, by their exertions, and patient labours, are continually adding to its beauty and improvement.

Alas! in how different a light do we behold too many of the absent great; their persons, nay even names, are very frequently not known upon their ex-

C

tensive

In the dales of the Moorlands, the houses are mostly situated upon the farms, and are generally built of stone: the western dales are remarkable for their hay-barns, which are situated in the centre of every third or fourth field: those barns have always a cow-house at one end, and frequently at both, where their cattle are wintered: by this arrangement, the hay and manure are not carried any great distance; an important circumstance in these hilly countries. The barn is of particular use during the

tensive estates, which in general are not half cultivated. These great men have nothing of the interest or command upon their own property, that their agents or bailiffs, nay, that the leading farmer of the village is in possession of.

—M. G. Steele, Esq.

time of making hay, in a country where the weather is very uncertain, and attended with sudden, frequent, and violent showers.

The practice of thatching the roofs of buildings, is far from being economical; this kind of covering being frequently in want of repair, and often not attended to in due time, causes other parts of the building to be injured; it also affords harbour for vermin, and is more expensive in the first cost and repairs than pantiles, which are generally made use of in those farm-houses which have been built of late years.

Little can be said in praise of the arrangements either of the farm-houses or offices throughout this district; the old ones appear as if built without plan or contrivance, patched together at various times, as the circumstances of the occupier might happen to require. Their shapeless and inconvenient form and situation, may be accounted for in the practice which formerly prevailed, of the occupier standing to all repairs, unless, perhaps, the landlord might contribute timber, the produce of the farm: where the tenant was architect, regularity or efficiency of plan could not be looked for; and where he was also to be at the expence of the execution, the landlord had hardly any right to interfere in correcting it. Those of a more recent date, are far more commodious and compact, and the plans are daily improving, though not yet arrived at perfection; much more attention is paid than formerly to external accommodation, and some judicious plans of farm-yards may be met with. Instances, however, are not wanting, where flying from one extreme to its opposite, people have built farm-houses and offices upon a scale far too large for the ground occupied with them: this brings on the owner, in the first instance, unnecessary expence, and induces an habit of extravagance in the tenant, which

sometimes has proved ruinous to him. In building farm-houses, one year and three quarters rent was formerly held to be about the sum required for a new and complete erection; but now (1798) a much greater sum will be required, on account of the great advance in the articles in building, in labour, and taxes, though this may vary somewhat, according to circumstances; but economy ought to be observed, as the owner has a right to reasonable interest for his money expended: beyond this it is too much for the occupier to pay.

The tenant usually stands to all common repairs; he expects to receive the premises in an habitable condition, and in such he is expected to leave them; but where he wishes for considerable repairs or additions to be made during his tenancy, it is not unusual to agree, to stand to a certain proportion of the expences, an half or third; this is an excellent condition, inasmuch as the tenant being a partaker in the expence, will see that due economy is attended to, and that workmen employed by the day, do not mis-spend their time, when the landlord might not have the power of superintending them himself. Tenants are of course at all times willing to perform whatever carriage-work may be required for repairs; by taking leisure opportunities, they can do it at little or no expence.

The following account of farm-buildings in the vale of Pickering, an interesting tract in the district under survey; and hints for the construction of them, extracted from Marshall's Rural Economy of Yorkshire*, are worthy of attention.

“ In *rural economy*, straight lines and right angles are first principles, which can seldom be deviated from with

* Vol. i. p. 125, &c.

propriety, either in laying out a farm, or in planning farm-buildings.

“ Here the great object is to obtain the desired conveniencies at the least expence, present and future taken jointly, so long as the given conveniencies may be required. To these principles we may venture to add, the greater number of conveniencies there can be included in one building, the cheaper will those conveniencies be obtained.

“ There is a certain width which can seldom be exceeded with propriety in farm-buildings; but the nearer this width is approached, the greater quantity of conveniency will in general be obtained with a given expenditure.— The long cube form, with plain span roof, can never be dispensed with without evident impropriety, in constructing farm-buildings.

“ The practice of housing cattle in winter, which will be spoken to hereafter, requires a greater quantity of building than that of wintering them in the open yard. But the quantity of barn-room requisite in this country, even on arable farms, is much less than in the southern counties, where barley and oats are harvested loose, and where the shovel or the sail fan is used in the dressing of corn. Here corn is universally bound, and the machine fan in almost universal practice. In Norfolk, one man expects a floor of fifteen feet by twenty-four to himself; here two men will thrash contentedly on a floor nine feet by twelve; ten feet by fifteen is a full sized floor.

“ There is in the vale of Pickering an instance of the entire farmery (of a small upland farm) being comprized under one roof.

“ The scite of a long square.—One end is occupied by a small dwelling place for a “hind,” or bailiff; the ground floor of the remainder by a stable and beast-houses; over

which are a barn and hay chamber, with a *chamber barn floor*! a thing I had not seen nor conceived an idea of, before I observed it in more instances than one, in this district.

“The advantages of a *chamber barn floor*, are dryness, cleanness from dirt carried in with the feet, and security against pigs, poultry, and other accidents to which ground-floors are more liable: for thrashing wheat upon, chamber-floors are obviously preferable to ground floors, most especially in low dirty situations.

“No essential disadvantage has yet struck me respecting a chamber thrashing-floor; but with respect to a *chamber barn*, there is one which is obvious, namely, that of having the corn at harvest, a busy season, to raise one story higher than ordinary.

“If a barn be built against a rising ground, this objection falls in part or wholly. Even on plain ground, it appears to me that (especially where cattle are housed) it would be greatly overbalanced by the advantage of obtaining a suite of stables, cart-house and cattle-houses, without the expence of roofing, in the first instance; and which, if substantially built, would last for ages to come, without repairs.

“The flooring of a chamber barn, might, on the whole, be somewhat more expensive than that of a ground-floor barn; but the thrashing-floors, if of plank, would be laid cheaper, and last much longer, in the former than in the latter species of building; and the mow-floors, if laid with clay on rods, would soon regain their extra cost in keeping the bottoms of the mows dry and sweet, and in preserving it more secure from vermin than ground-floors generally do.

“In a country like this, or in any country, or on any farms on which grass land predominates, and where the housing

housing of cattle is practised, I see no sufficient objection to chamber barn floors, nor to entire chamber barns. On the contrary, it appears to me that on small grassy farms, in low damp situations at least, they would be found singularly eligible.

“ But although a close yard is unnecessary where cattle are housed, a single building like that which was last described, is perhaps too simple to be altogether eligible, especially in an exposed situation, where some degrees of shelter are requisite.

“ Two buildings properly placed, would give this necessary shelter : one of them a barn, with offices under it ; the other the dwelling-house, placed at right angles with the former : the two buildings touching at the corners only ; forming a small yard with their ends, for hogs, poultry, &c. and a larger one with their fronts, for the dung pit, &c. with a small archway communication between them.

“ It is usual in planning a farm-yard, to place the main line of building with its front to the south ; in which case two wings become necessary to screen the yard from north-east and north-west winds : and perhaps this has established the common practice of inclosing a farm-yard on three sides with buildings.

“ But if instead of the back of a building being placed to the north, the angle of two buildings were directed to that point, the yard would be most effectually screened from the north, the north-east, and the north-west wind, without an unnecessary multiplication of low narrow buildings to eke out a third side with.

“ On a capital corn farm, on which a number of substantial buildings are required, three lines of buildings may be eligible ; but on any small farm, or on almost any farm on which grass land abounds, two lines of build-

ing, forming a cheveron or carpenter's square, and placed with the angle towards the north, would in my mind be greatly preferable.

Another idea in *rural architecture*, new to me as that of a chamber thrashing-floor, I have seen executed in a substantial manner by two of the first occupiers in the vale, namely, *a granary over a barn floor*.

"In all other barns I have seen, the space over the floor, whether this be large or small, and whether the buildings be low or lofty, remains entirely useless*. The idea of occupying the lower part of this space with a cattle-house, as well as that of filling the upper part of it with a granary, have perhaps been originally struck out in this country.

"In the two instances in which I have seen *granaries over barn floors*, the joists are supported by two beams thrown across the building, and the flooring of the granary let into the walls at the ends; so that notwithstanding the granaries may be surrounded with vermin, they are proof against them.

"In the floor is a trap-door, with tackle over it, to raise and lower the corn from, and to the barn floor.

"The height between the floors, thirteen feet. This, in my opinion, is too great a height. Ten feet high is the most, the flail requires; and every inch above that height, renders the granary in many respects less commodious."

* Except in one instance, in which a very spacious building having been converted into a barn, joists were then thrown across, out of the reach of the flail, and the mows continued over the floor.

SECT. III.—COTTAGES.

THE cottages of the labourers are generally small and low *, consisting only of one room, and, very rarely, of two, both of which are level with the ground, and sometimes a step within it. This situation renders them damp, and frequently very unwholesome †, and contributes, with the smallness of the apartments, to injure the health both of parents and children, for in such contracted hovels numerous families are often compelled to reside.—In the North Riding the farmer is by no means well accommodated, but the labourer is much worse.

When we consider the importance of this class of people ; that they are the powers by which the business of

* Good and spacious accommodations are worthy of attention ; it is well known that cooking and sleeping in the same apartment promotes disease these apartments should be frequently white-washed, and cleanliness attended to ; these neglects produce fevers, which spread far beyond the original source, and are, it is very much suspected, the cause of our winter fevers. In summer the family is more abroad, but in the cold season, being all fixed to one fire, and one apartment, with the necessary cookery, a more dangerous fever will be the consequence, than in the warmer seasons. The land-owners might with good interest for their money, build them larger houses.—*Anonymous.*

† The labourers sleep in close wainscotted beds, which are placed near the fire ; were they accommodated with chambers, they are too idle, or too much wedded to old customs, to make any use of them, but as repositories of lumber. In case of infections, these beds are the most inconvenient and dangerous that can well be conceived.—*Cler Ebor.*

The reason why labourers use close wainscotted beds, is because they take up little room when put up, and it frequently happens that they have only one room both to live and to sleep in, they are therefore compelled to the use of those unwholesome beds ; and I cannot entertain so illiberal an opinion of the labourers of this district, as to suppose that they would be so idle as not to use chambers if they had them ; indeed, so far as I have seen, they that have them, use them.—*J. T.*

I cannot agree with *Cler. Ebor.* in his opinion of the labourers of this district ; but I am very confident that they would be thankful for any conveniences granted to them. Humanity requires that cottages should be built, affording habitations more wholesome, comfortable and decent, than those we too often see,

agriculture is performed, it is surely desirable that they should be accommodated with every convenience, at least for their health.

It would be of considerable use, to build several cottages adjoining each other, that the families may have better opportunity of rendering mutual assistance to each other, than if they were at a distance; besides, the conduct of each, being under the eye of his neighbour, each may be induced thereby to demean himself more circumspectly; neither would it be any disadvantage were they not situated in a village, particularly in one that is large, or corrupted by ale-houses. When an ale-house is near, labouring men are often drawn into it, either by their companions, or from a desire of society, which is sometimes indulged at too great an expence.

Each cottage ought to have a garden, of from half a rood to one rood in extent*; in this the occupier might
raise

* It is much to be doubted whether the cottager would cultivate this garden; few instances are in recollection, of time so well employed; in general the gardens of cottagers, and even farmers, are useless wastes.—*Cler. Ebor.*

I do not know why *Cler. Ebor.* has so mean an opinion of the labouring class in the North Riding, but from the knowledge I have of them, they are as respectable as those of any part I am acquainted with, and are deserving of every convenience likely to render their situations more comfortable and easy; and I have not the least doubt but the cottager would cultivate his garden. There is scarcely an instance in the neighbourhood where I live, of a labourer being in possession of a piece of ground, but he reaps at least one crop from it in the year, and often two; the principal part of it, is planted with potatoes, and he generally has a few peas, beans, and cabbages; the first ground that is cleared of the summer crop, is generally planted with brocoli for the winter, and the garden is rarely without some gooseberry trees; and sometimes some of the larger kinds of fruit trees; the produce of those is disposed of either amongst the neighbours, or at the nearest market-town, which raises them a little money, often to the amount of two or three pounds.—*J. T.*

Cler. Ebor. may have seen the gardens of cottagers in a state of "useless waste;" but it would be neither good policy or humanity to refuse small gardens to the labourers. I know that, in Yorkshire, the cottagers are very desirous of obtaining small inclosures, provincially gaths, near their houses, for which they will give a much higher rent than the land would lett for to a farmer.

raise a few vegetables, which would contribute to the comfort as well as health of his family, and have the additional advantage of employing the man in the evenings, when his time might otherwise be spent to a less useful purpose.

A few dwellings have of late been built in different parts of the Riding, with some of these conveniencies; and it is well worth the attention of land-owners to increase their number,

mer. If the cottager be industrious, he employs himself in the garden, after the usual working hours, instead of resorting to an ale-house; his wife may also assist there, and the little children be in such work as is suited to their ages. The possession of gardens tends much to improve the morals, and condition of the poor, and to give habits of industry to the children at an early age.—H. M. M. *Vavasour.*

REFERENCES TO PLAN I.

a—Passage and stairs,

b—Parlour,

c—Kitchen.

d—Scullery,

e—Pantry.

f—Dairy.

g—Pig-styes.

h—Necessary.

i—Coal-yard,

k—Soil-hole.

l—Carriage-house,

m—Cow-house,

n—Fodderham,

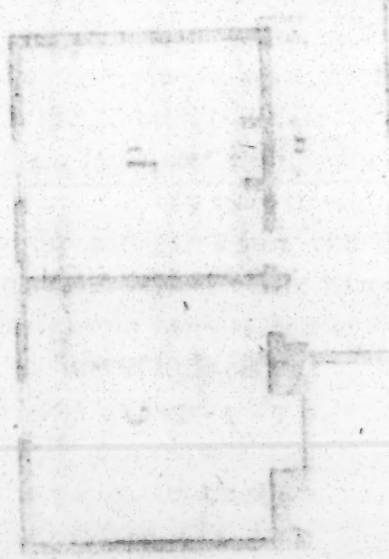
o—Stable.

p—Open stable.

q—Fold-yard.

r—Chamber barn, over

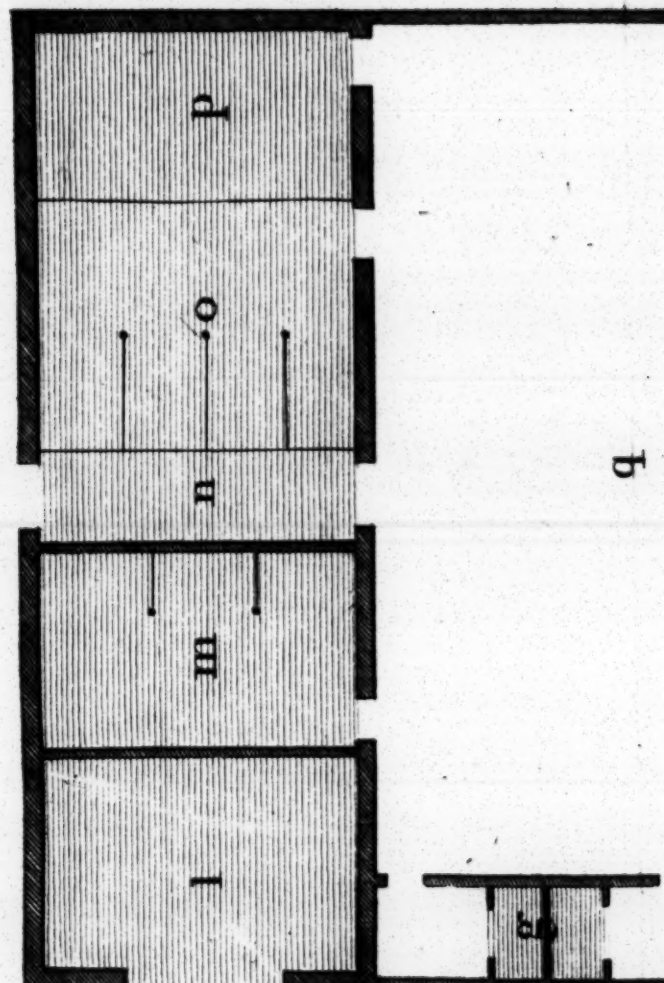
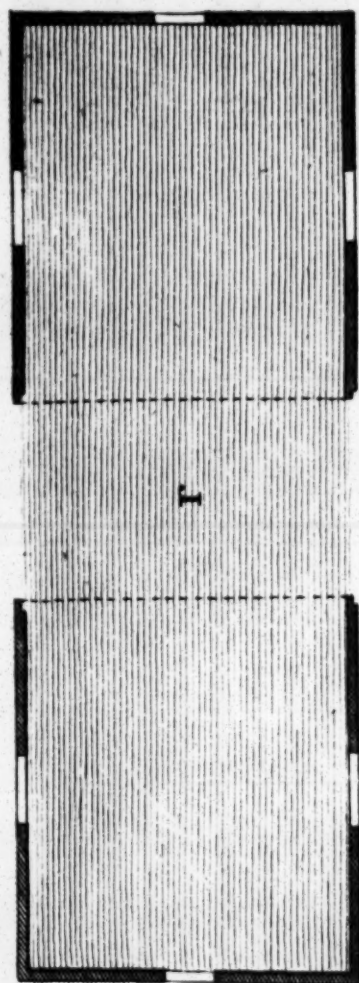
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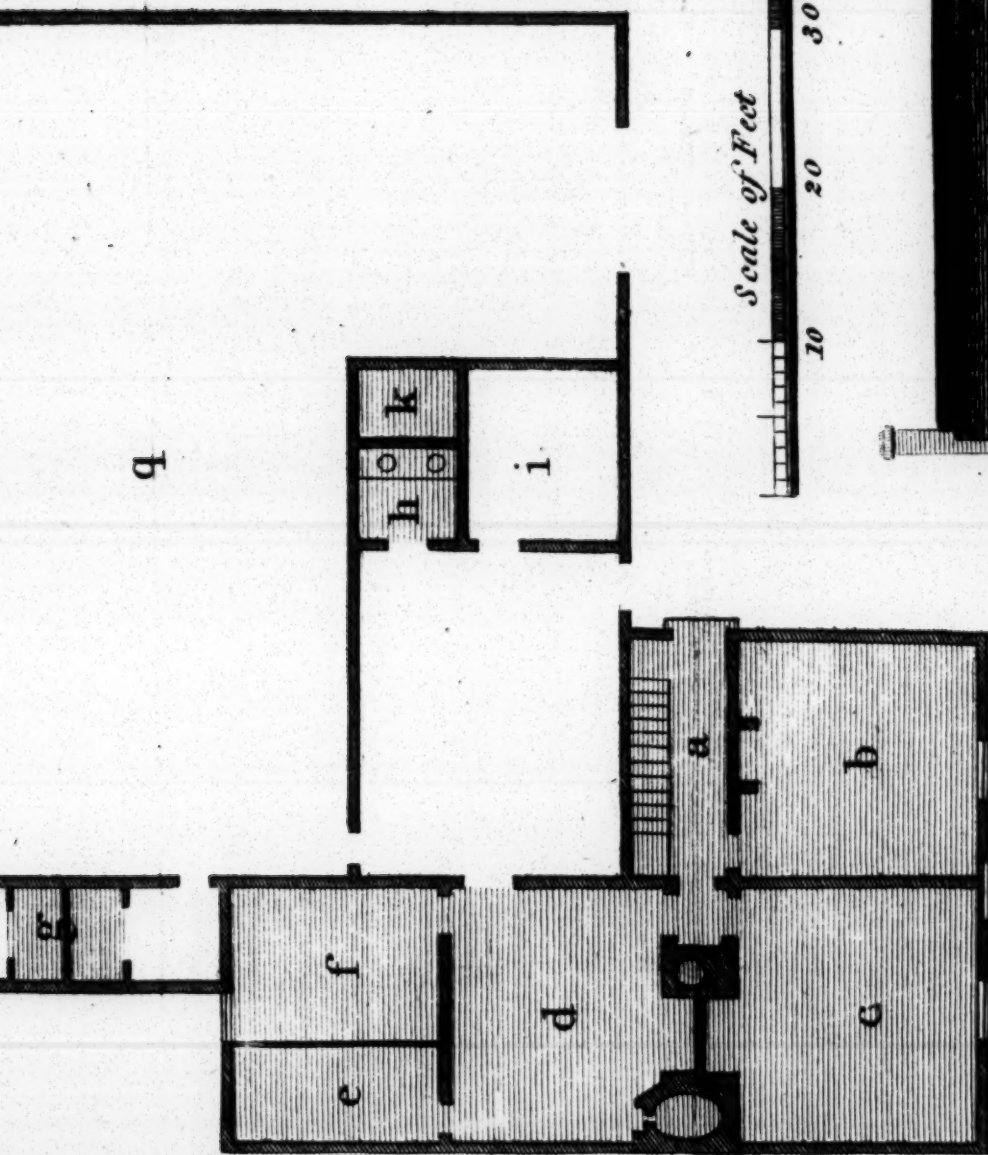


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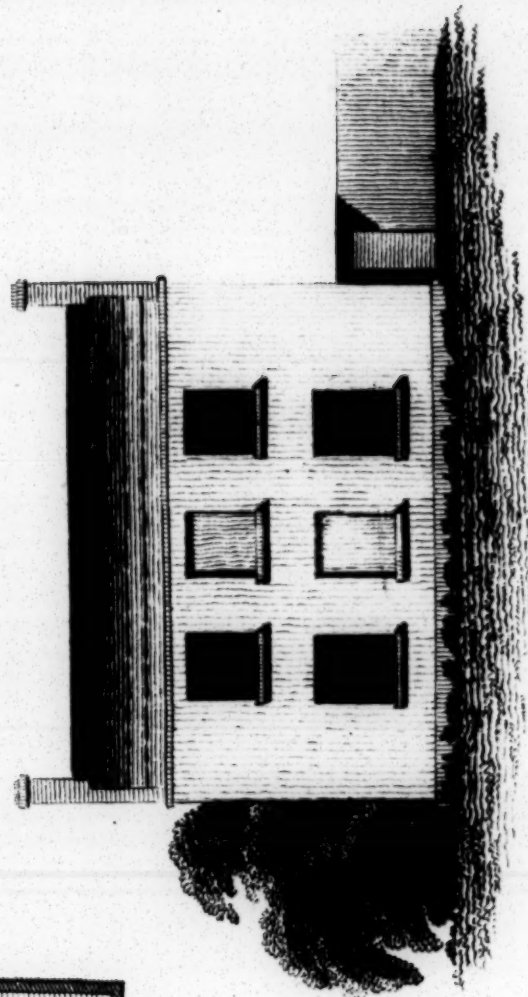
PLATE I.

Plan 1.A House & Offices for a Farm of £100 to £150.





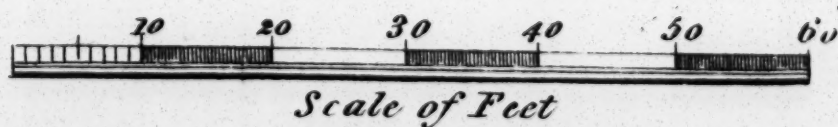
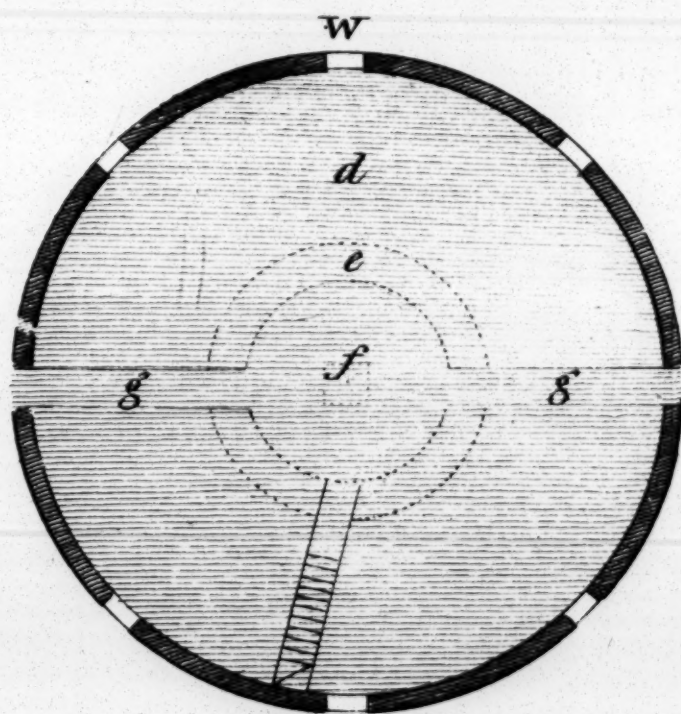
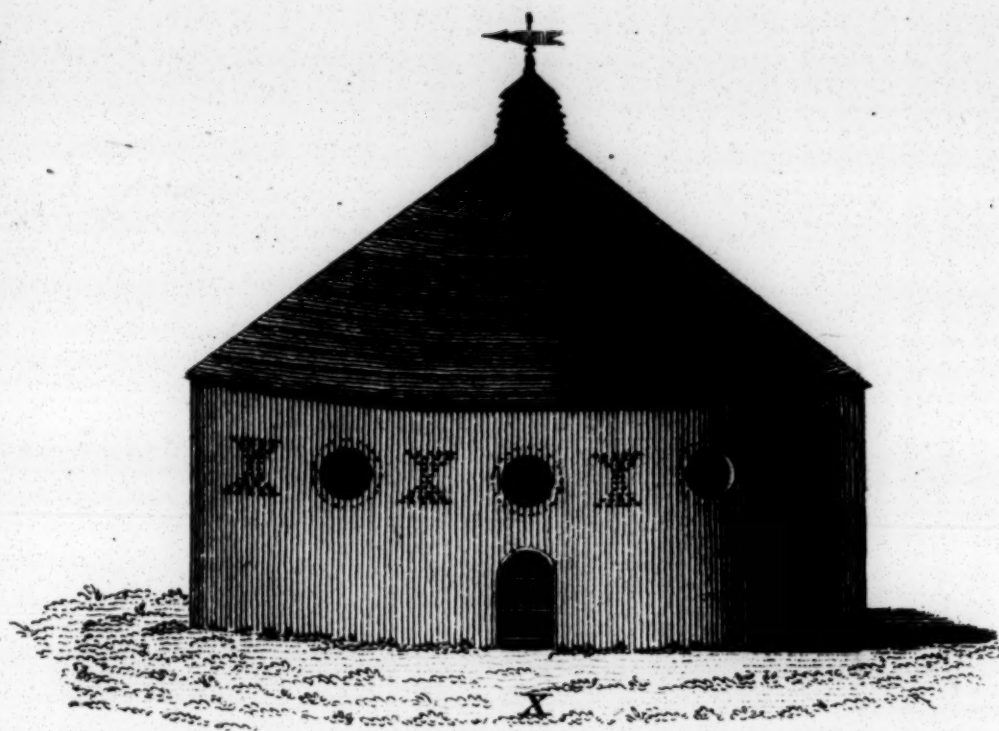
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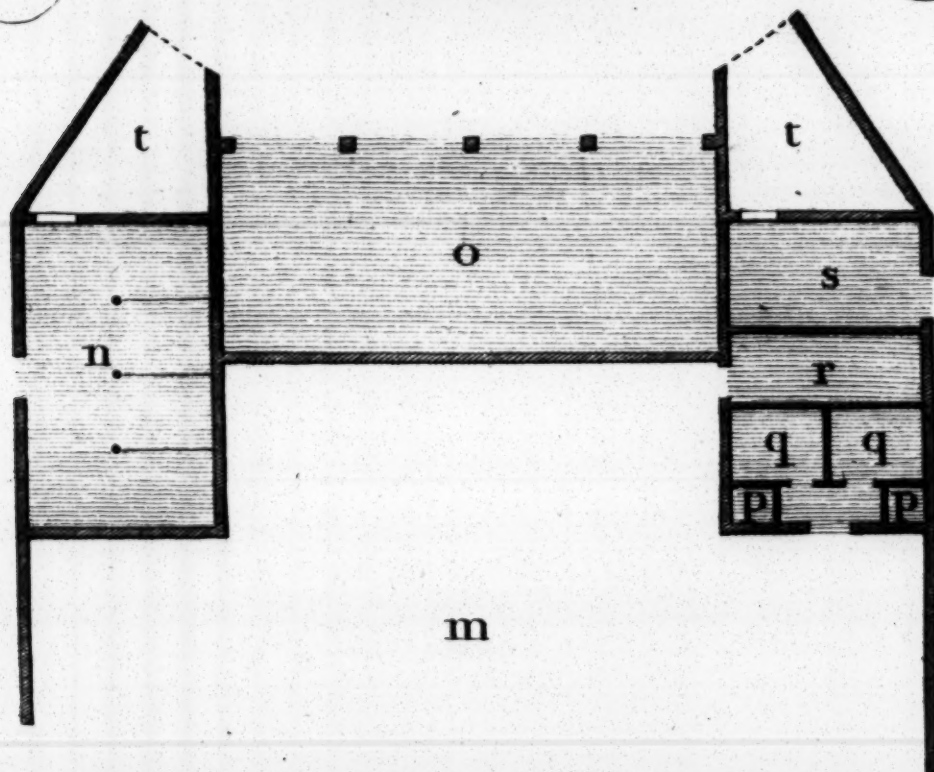
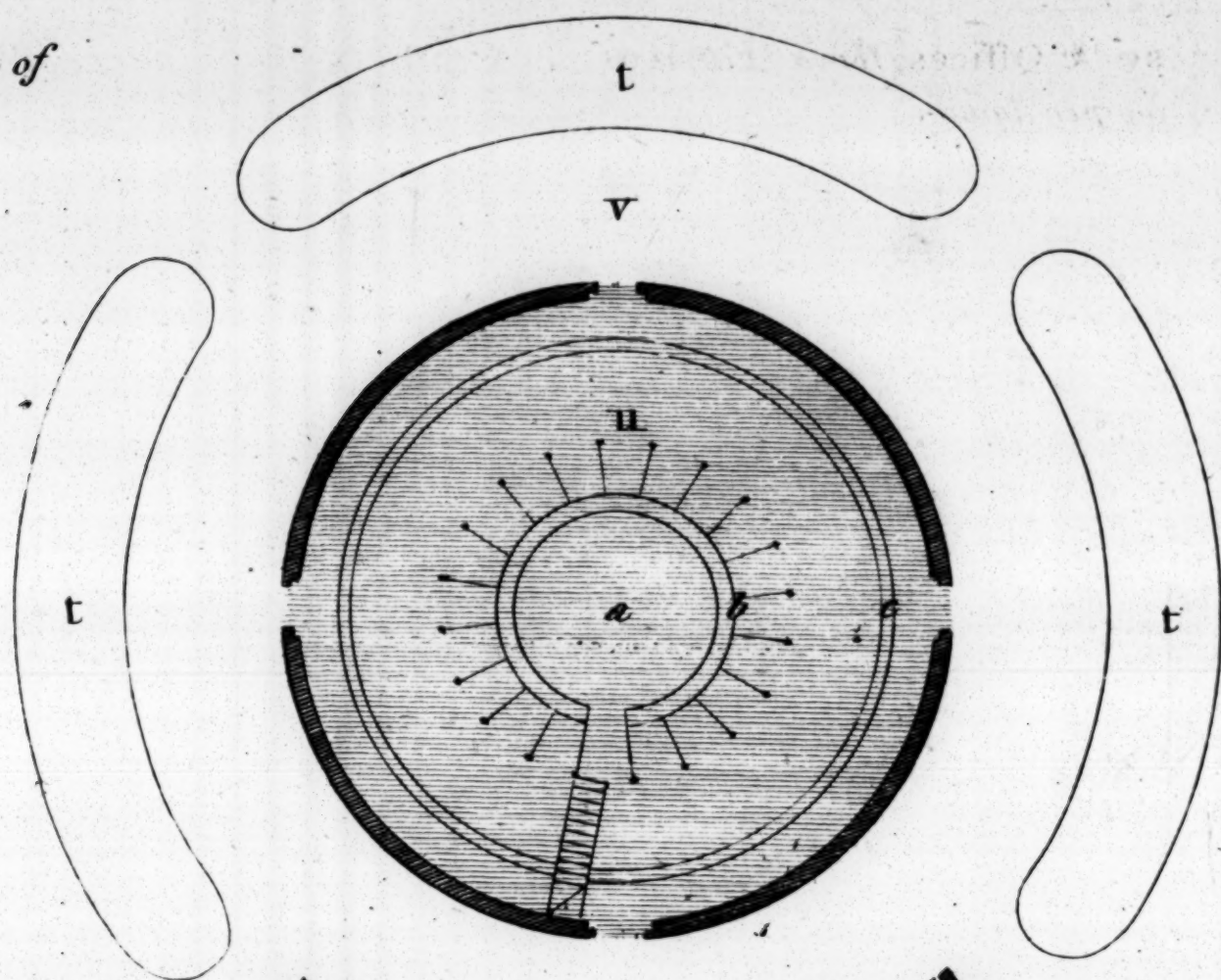
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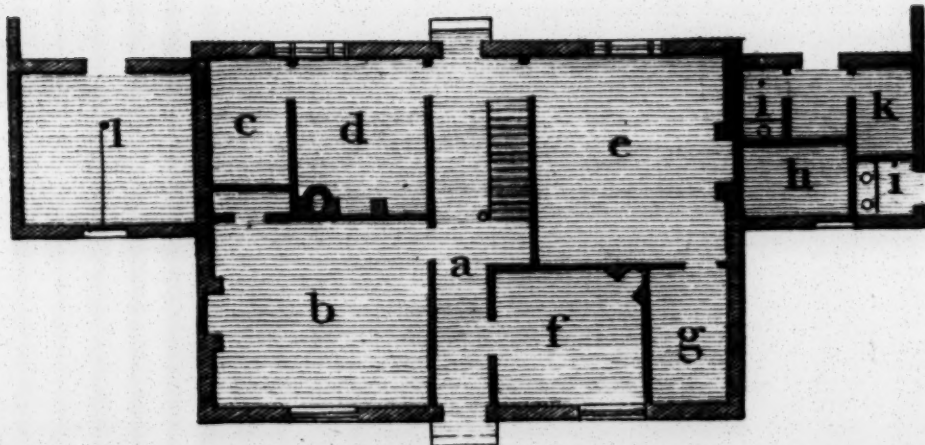
*Plan 11. A House & Offices for a Farm of
£200 per Annum*



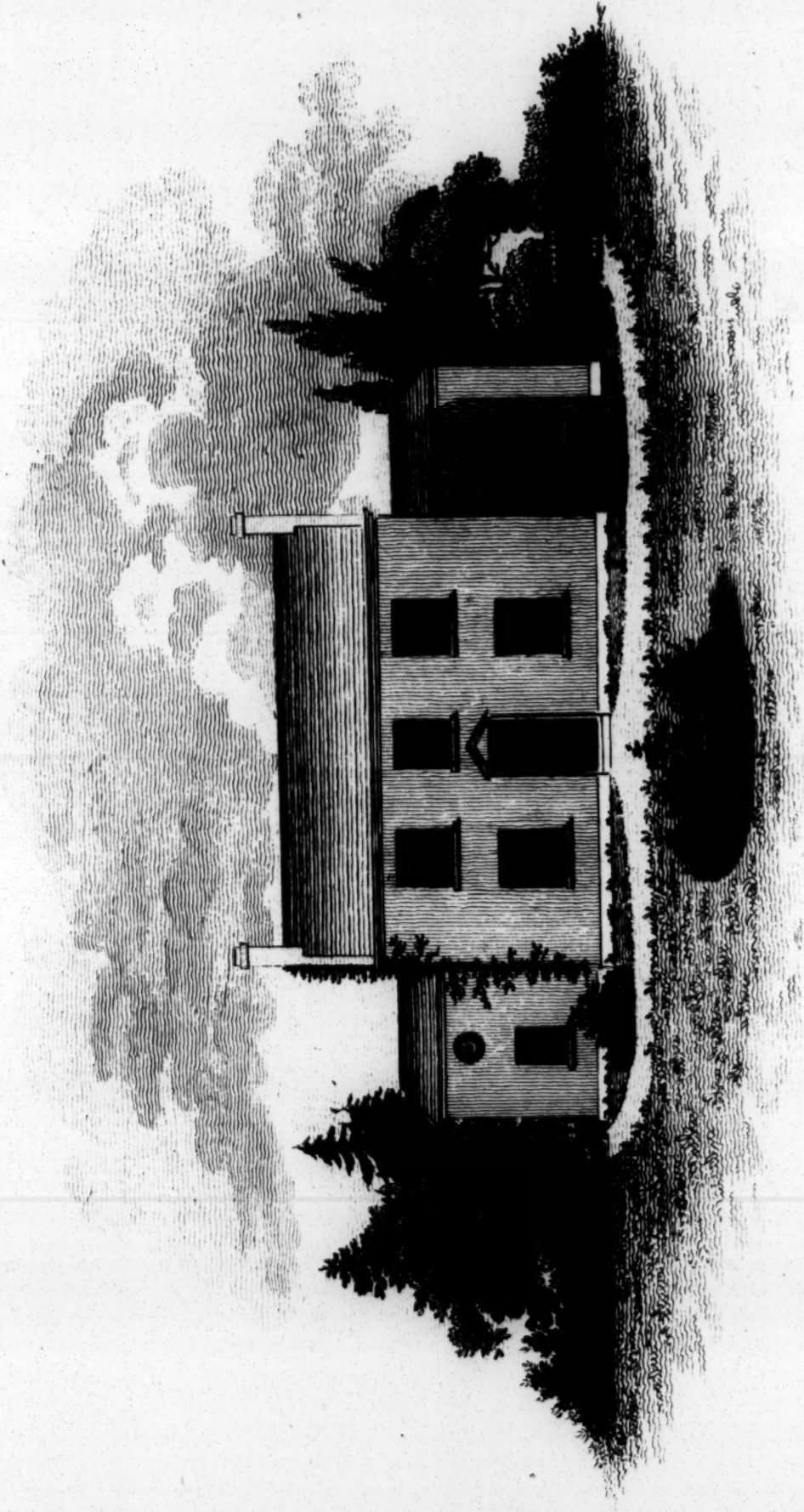
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Garden



Elevation of Plan II

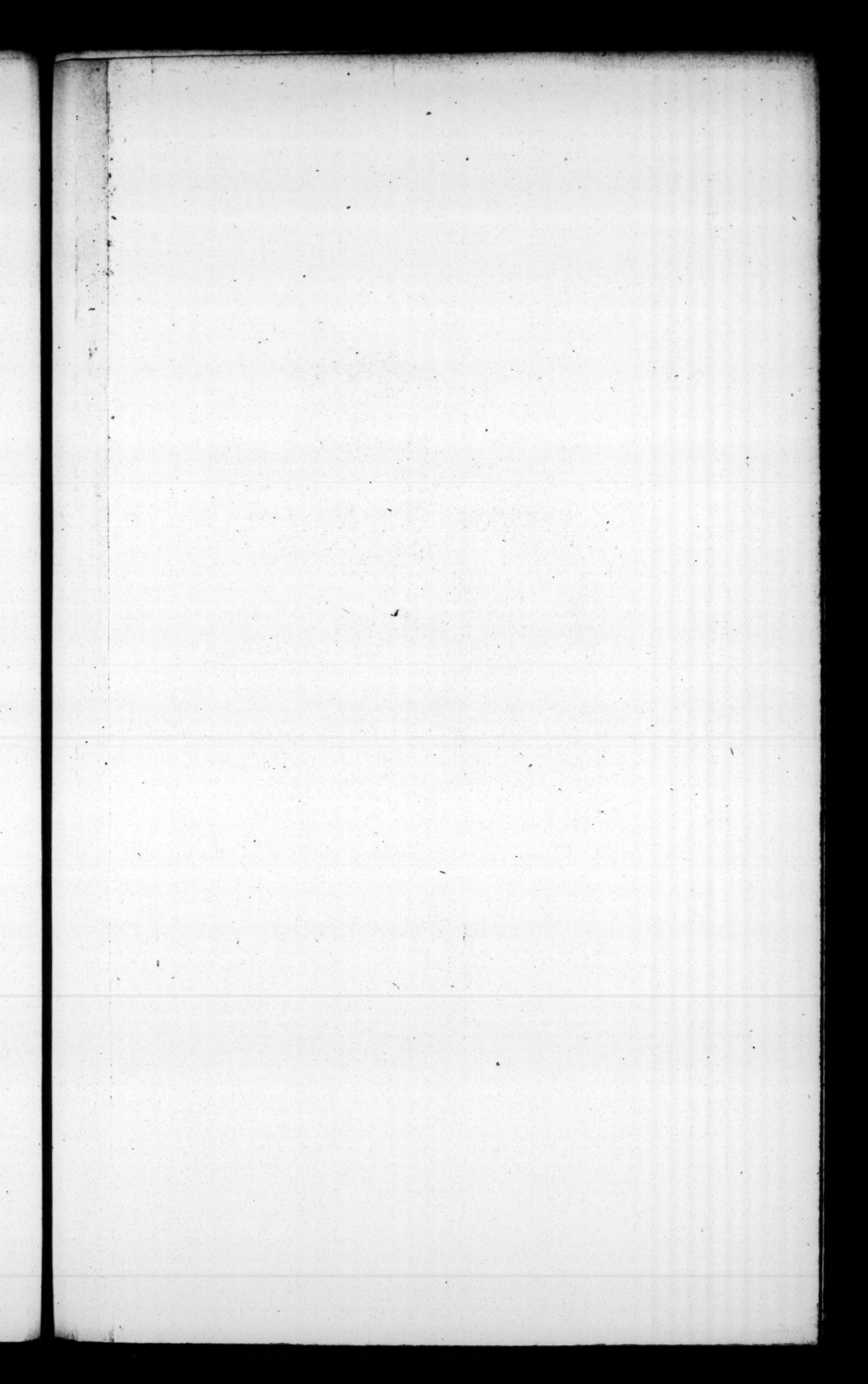


REFERENCES TO PLAN II.

- | | |
|--|---|
| a—Passage and stairs. | b—The rack. |
| b—Parlour. | c—The channel, from which drains should be laid to the dung pits. |
| c—Dairy. | v—Carriage road round the barn. |
| d—Scullery. | w—Chamber-barn over the beast-house. |
| e—Kitchen. | d—Mow-stead. |
| f—Study. | e—For undressed corn. |
| g—Pantry. | f—Thrashing-floor, lighted by a sky-light. In the floor is a trap-door to put the straw down. |
| h—Soil-hole. | gg—Two passages to two doors, by the opening of which, light and air are admitted to the floor, and which are useful to take the corn out at when thrashed. |
| i,i—Necessaries. | x—Elevation of the barn. |
| k—Coal-house. | |
| l—Two-stand stable. | |
| m—Court. | |
| n—Four-stand stable. | |
| o—Carriage-shed. | |
| p,p—Troughs for pig-meat. | |
| q,q—Pig-styes. | |
| r—Hen-house. | |
| s—An open stable. | |
| t,t,t,t—Dung pits $2\frac{1}{2}$ feet below the surface. | |
| u—Beast-house. | |
| a—For straw. | |

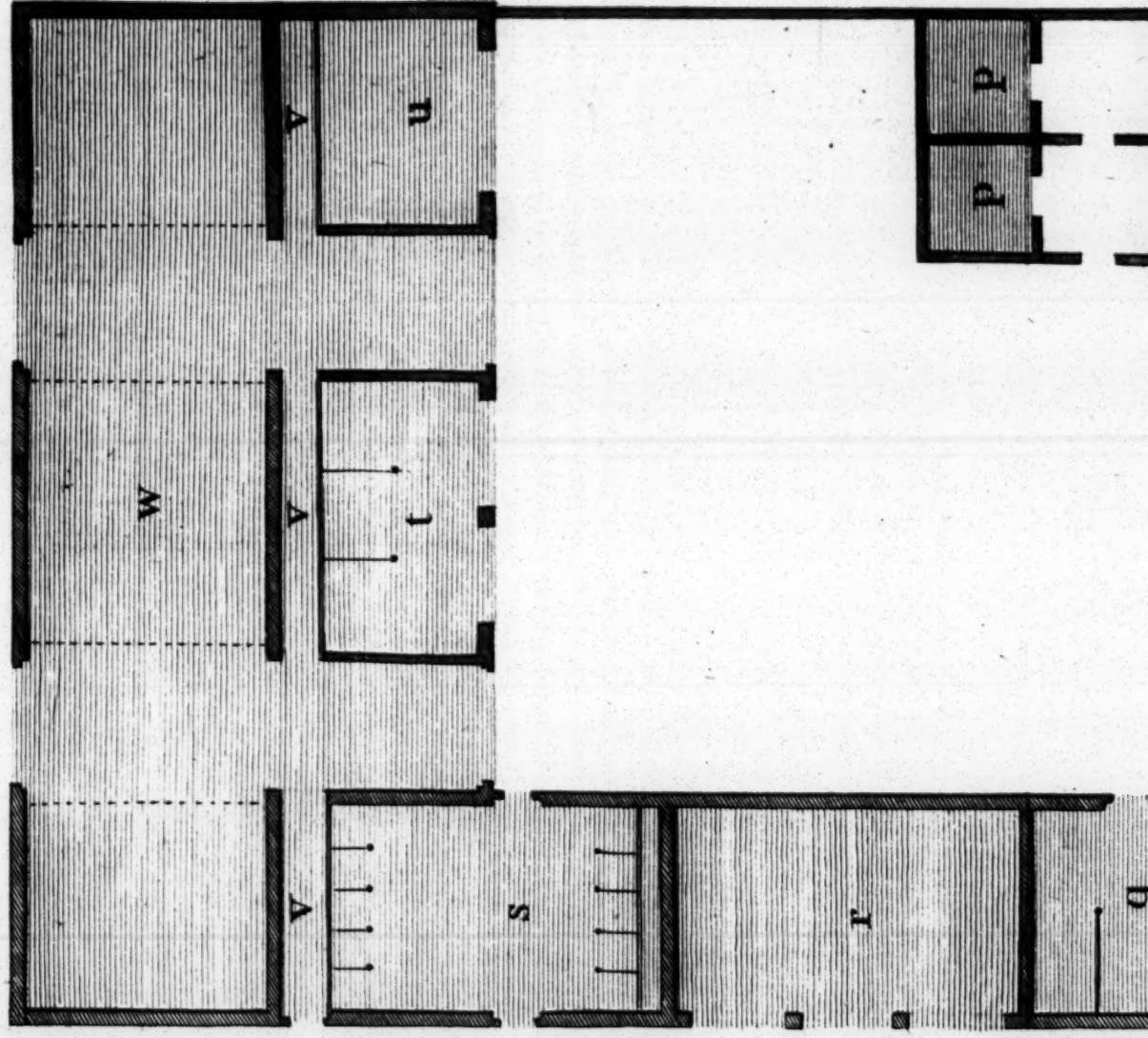
REFERENCES TO PLAN III.

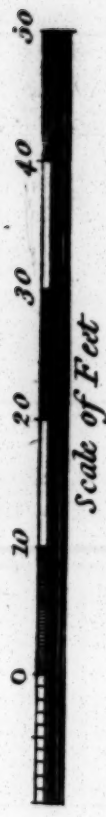
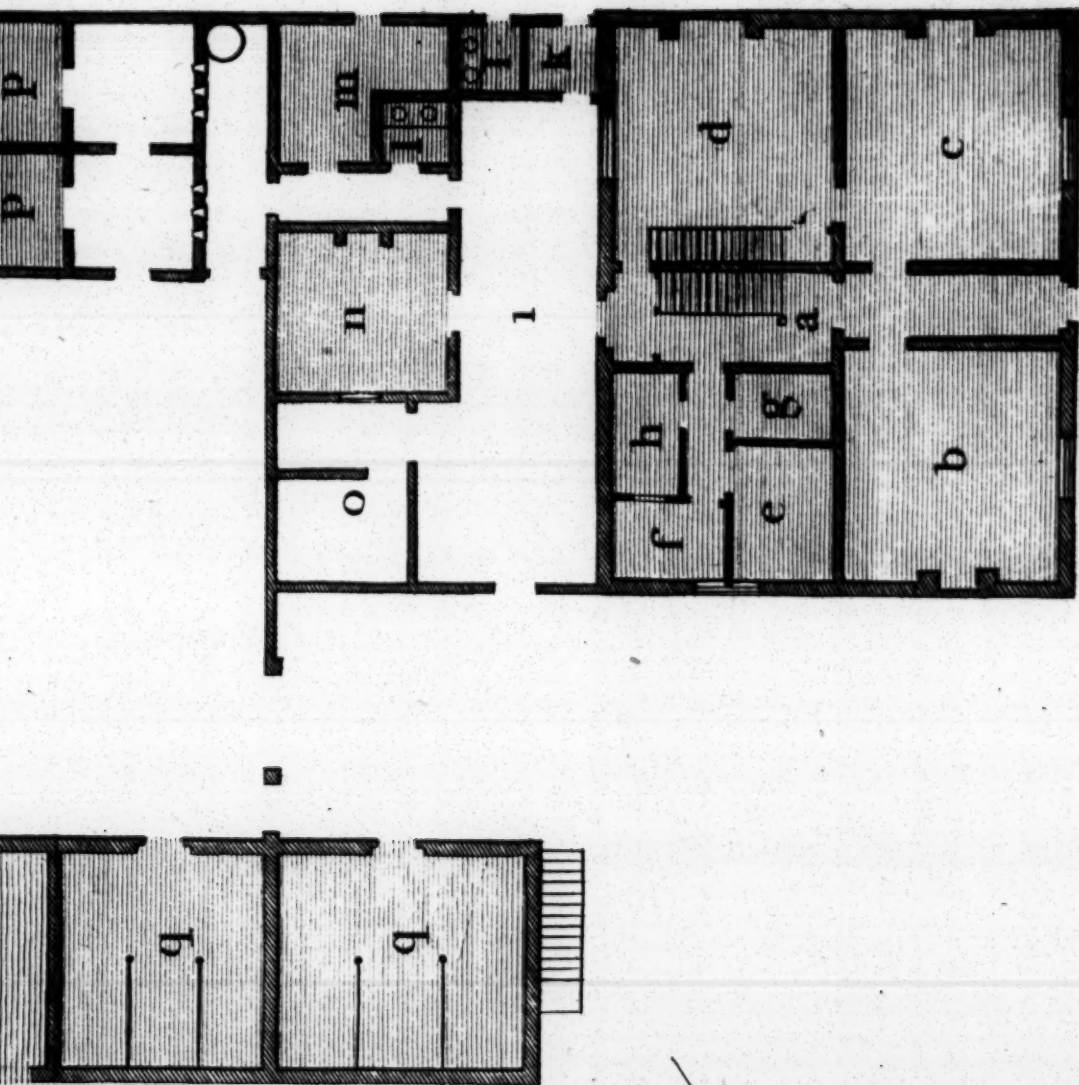
- a—Passage.
 b—Parlour.
 c—Common keeping-room.
 d—Kitchen.
 e—Dairy.
 f—Pantry.
 g—Wine-cellar.
 h—Ale ditto.
 i—Court.
 k—For garden utensils.
 l,l—Necessaries.
 m—Soil-hole.
 n—Scullery.
 o—Coal and wood yards.
 p,p—Pig-styes.
 q,q—Stables.
 r—Carriage-house.
 s—Beast-house.
 t—Shed from the barn for six straw beasts.
 u—Another shed, for cattle or young horses.
 v,v,v—Fodderhams communicating with the barn-floors.
 w—Barn, with two thrashing-floors which extend through the shed.
 The whole of the shed and cow-house to be chambered over for granaries, to communicate with the thrashing-floors by trap-doors.



Plan III A House & Offices for a Farm of
£300 per Annum.

PLATE IV.



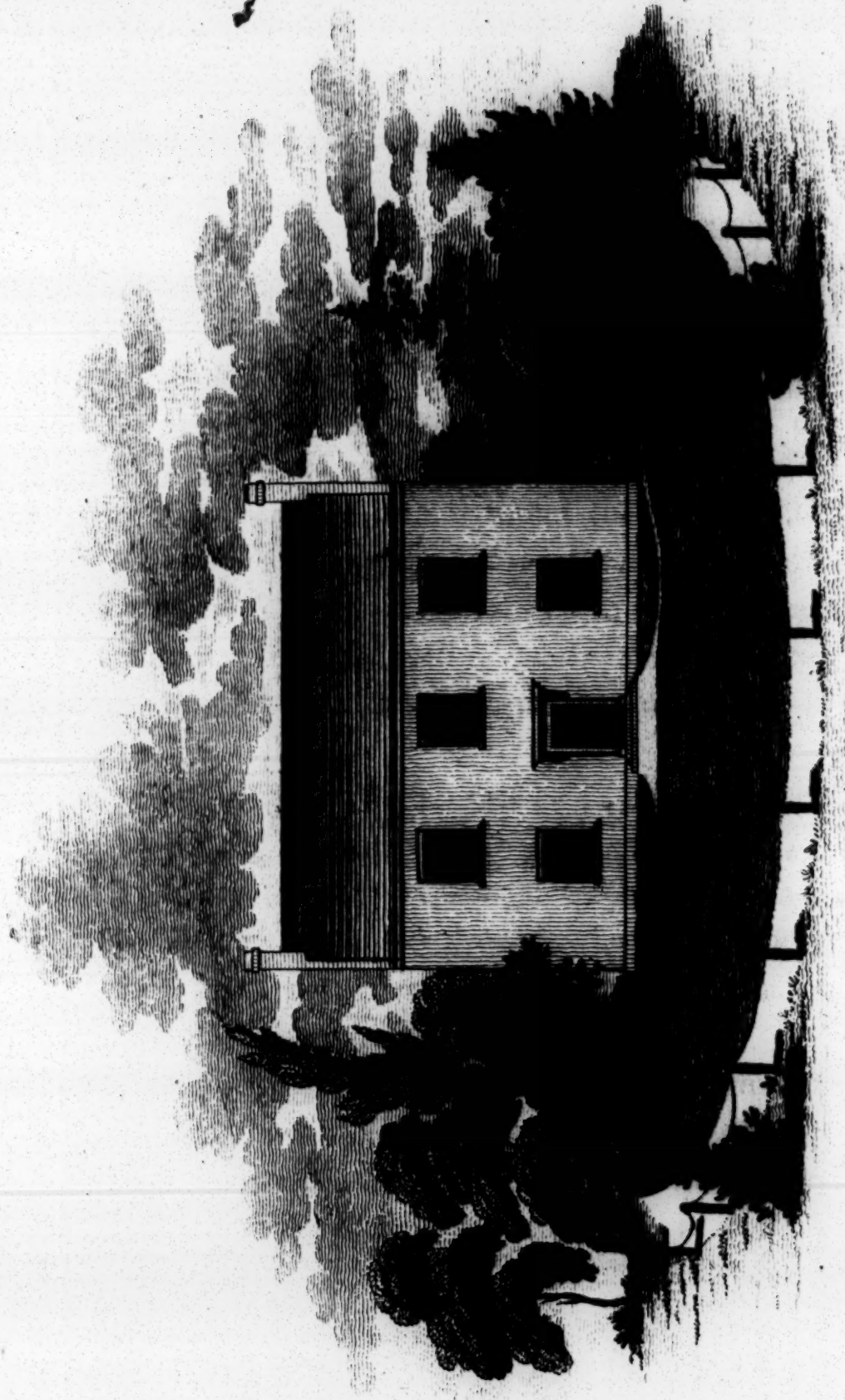


Scale as shown.

B
3
L

Elevation of Plan III.

PLATE V.



Wade no. Strand.

B
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CHAPTER IV. MODE OF OCCUPATION.

SECT. I.—SIZE OF FARMS, AND CHARACTER OF FARMERS.

IN so large a district of country, varying so greatly, both in the quality and value of the soil, it is to be expected that a great difference will prevail in the size of farms; but it is from the rental, rather than the number of acres, that this variation can be most accurately ascertained; for where, in the same farm, as frequently happens here, a man occupies land, both of the best and the worst quality, the number of acres form not a proper scale by which to judge.

In the northern part of the vale of York, the rental of farms is usually from 100*l.* to 300*l.* per annum; of very few, perhaps, as low as 40*l.* and some as high as 600*l.*; but further to the southward, there is a larger proportion of small farms, some of which are as small as 20*l.* per annum; with others as high as 200*l.*

On the Howardian hills, the generality of farms are under 100*l.* per annum, very few are as high as 200*l.*

In Ryedale are many farms of 200*l.* per annum, and several from that to 800*l.* per annum or upwards*;
never-

* A farm of 200*l.* per annum, for the most part, is in higher cultivation than a farm of 1000*l.* per annum.

A greater proportion of small farms would much improve the national interest. In my opinion there ought to be none above 200*l.* per annum.—
J. Smeddle.

nevertheless, the greater proportion of it is held in farms of about, or below 100l.

In the Marishes, they may generally be stated at from 50l. to 150l. per annum; few as high as 200l.

In both the Eastern and Western Moorlands, the farms are small, very few above 100l. per annum, but generally from 5l. to 40l. per annum.

Wherever there are towns or large villages, a greater proportion of small farms are to be met with.

In those parts of the North Riding which are best cultivated, the farmers form a very respectable class of society; they are liberal in their sentiments with respect to their profession; they do not think, that the science of agriculture has arrived at its ultimate perfection; they are desirous of making improvements, and are ready to adopt any in which there is a reasonable probability of success; exceptions, however, are not wanting in the more remote and sequestered parts of the Riding, of those who holding different sentiments, and influenced by different habits, are content to jog on in the way of their forefathers.

In some places, even the cultivation of turnips, where the land is well adapted to them, has not yet been introduced. It is observable, that in those families which have succeeded from generation to generation to the same farm, the strongest attachment to old customs prevails; such have the most confined ideas; and of such transmission of property, without any aid from leases, instances, in this district, are almost innumerable.

For conduct and character, the farmers under survey must deservedly rank high among their fellows in any part

When arable farms are very extensive, some of the fields are too distant to be cultivated to great advantage. It is often necessary to have more than one set of buildings upon one farm: this is the same thing as several farms in the occupation of one person, whose attention must be divided. Rent is no criterion by which to estimate the size of farms.—*H. M. M. V.*

of

of England, they are generally sober, industrious, and orderly; most of the younger part of them have enjoyed a proper education, and give a suitable one to their children, who, of both sexes, are brought up in habits of industry and economy: such conduct rarely fails meeting its reward; they who merit, and seek it, obtain independence, and every generation, or part of every generation, may be seen stepping forward to a scale in society somewhat beyond the last; fortunately, this country is purely agricultural, and the inhabitants, solely cultivators of the earth, are endowed with the virtues of their profession, uncontaminated by the neighbourhood or vices of manufactures.

SECT. II.—RENT.

AN instance of the rents of this Riding being paid in any other manner than in money, has not occurred to the Surveyor, except that on some large estates, *boon-days* are performed by the tenants, which are usually for the purpose of leading coals and other articles to the mansion of their landlord: these are usually proportioned to the size of the farms, and, not amounting to more than the use of a team for one or two days in a year, at the most convenient seasons, are not held to be attended with any inconvenience.

The average rent of farms of pretty good soil, is from 15 to 21 shillings per acre, in which there may be land rated at from five to 35 shillings per acre: so that the average value of a farm will vary according to its proportion of good and bad land. Some farms of the latter kind may be lett as low as five shillings per acre, and some lett, cheaper at 30s.; so great is the inequality of the soil, that

D

nothing

nothing accurate on this head can be stated. Near large towns, land for convenience in small parcels, and in the aggregate to no great amount, is lett at 3l. or 4l. per acre.

SECT. III.—TYTHES.

THE greatest part of this Riding is subject to tythes in kind, both rectorial and vicarial; but in many parishes they are compounded for, especially the latter; this mode, however, of provision, fortunately for the clergy and the public, is annually declining, by means of acts for inclosure; while tythes in lay-hands are becoming gradually extinct, by purchases made of the lay-impropriator by the owner of the soil.—Wherever tythes are taken, or liable to be taken in kind, they become the sure cause of strife, frequently of scandal to the church, and of ill-will and hatred to it on the part of those from whom they are exacted; an evil which, in this instance, has a far more extensive range, and a far more injurious tendency, than any dissention between mere individuals, or the lay-impropriator and the occupier of the soil: to the credit, however, of the tythe-owners of this Riding, a rigid mode of exacting them does not generally prevail.

SECT. IV.—POOR-RATES.

THIS Riding is favoured with various circumstances which ought to operate forcibly in keeping down the expenditure on account of the poor, the most material of which, the general residence of the principal landed proprietors on their estates, and an almost total absence of manufactures, need only be enumerated as adequate to the
pur-

purpose. Fortunately in this instance, the reasoning appears fully to be borne out by the fact. There is reason to believe that the average of the poor-rates of the Riding are still moderate, compared with those of many other places, notwithstanding a late and great increase brought on by the war; but this addition caused by the war, it is to be hoped will cease, whenever the country is blessed with a return of peace.

The following account of the poor-rates of this Riding, and of one hundred in it, drawn up at the time of the inquiries under T. GILBERT's act, and continued to the year 1792, is thought a sufficient elucidation of the state of the rates throughout the Riding, as the hundred alluded to, may be looked upon as a fair epitome of the whole, being in all respects circumstanced as favourably, and not more so, than any other part of the Riding, and from it a just conclusion for the whole may be drawn.

Account of the poor assessments in the North Riding of the county of York, as returned by the overseers in pursuance of an act passed in 1776 (16 Geo. III.):

Money raised within the year ending at Easter 1776.	Expended in paying county-rates, and for other purposes, not relating to the poor.	Expended on account of the poor.	Whereof was applied in paying rent of work-houses, and habitations for the poor.	In litigations concerning settlements and removals of poor.
£. 13,352 14 3	*	£. 12,676 1 8	*	*

A return made by the overseers of the poor for the hundred above referred to, in the year 1776, in pursuance of an act passed in 1776 (16 Geo. III.):

Money raised within the year ending at Easter 1776.	Expended in paying county-rates, and for other purposes, not relating to the poor.	Expended on account of the poor.	Whereof was expended in paying rent of work-houses and habitations for the poor.	In litigations concerning settlements and removals of the poor.
£. 1002 11 10	£. 12 4 6	£. 970 13 4	£. 66 17 9	£. 106 5 3

An account of the assessments for the relief of the poor in twenty-two townships in the hundred above referred to, in the North Riding of Yorkshire, during thirty-five years, from the year ending April 1758, inclusive, to April 1793; the average being taken in each seven years, extracted from the books of the parish officers of as many townships in the hundred as had books of accounts going back to the year 1758 :

From 1758 inclusive to 1765.	From 1765 to 1772.	From 1772 to 1779.	From 1779 to 1786.	From 1786 to 1793.
£. 176 3 3	£. 214 17 10	£. 338 3 9	£. 449 13 1	£. 627 19 9

This last table shews a most rapid increase in the poor-rates, and the ratio of that increase. The rates from 1786 to 1793 are nearly double of what they were fourteen years before; more than three times and an half as great as they were twenty-eight years before. From 1765 to 1772 they have increased 22 per cent. above the rate of the preceding seven years; from 1772 to 1779, 57 per cent. above the annual average of the preceding seven years; from 1779 to 1786, 33 per cent. above the amount of the preceding seven years; from 1786 to 1793, 40 per cent. above the preceding seven years; and as there is every reason to believe that they continue to increase in a much greater proportion than the above, during the present seven years, in consequence of the prodigious expence of maintaining the militiamen's families, and other expences brought on by a period of warfare, they must soon amount to a sum grievous to the occupiers, and ruinous to the proprietors of the land. Should they only have continued to increase in a ratio of 40 per cent. in the present seven years, above the increased ratio of the last seven years, they must now be five times as great as they were between 1758 and 1765; and

and should the next seven years have an equal rate of increase, they will then be seven times as great as between 1758 and 1765. Surely the proprietors of land must see the necessity, surely parliament cannot be blind to the necessity, of taking some steps to remedy an evil rolling up with the rapid increase of the snow-ball.

Average of the net money annually paid for the support of the poor in the North Riding of Yorkshire, in the years 1783, 1784, and 1785, according to the returns made by the overseers of the poor in pursuance of two acts passed in 1786 (26 Geo. III.) 18,865l. 16s. 7d.

Sum total of the return made by the overseers of the poor of the hundred above referred to, in the North Riding of the county of York, of the assessments raised for the relief of the poor in their respective townships, in the years 1783, 1784, and 1785, in pursuance of the act of 26 Geo. III. b. 56.

	Money raised by assessment.	No. of con- stant poor.	No. of occa- sional poor.	Expences of journeys and attendance on magistrates.	Expended in entertain- ments.	Law busi- ness, orders, certificates.
1783	£. 1202 14 7	188	251	£. 21 3 1	£. 7 17 1	£. 69 5 7
1784	£. 1149 17 10	201	252	£. 14 18 3	£. 6 17 1	£. 50 1 11
1785	£. 1370 8 8	207	240	£. 30 5 2	£. 7 15 3	£. 88 8 0

The annual sum of the donations settled upon the poor, and paid to them in the above hundred, was at this period 133l. 11s. This, added to the money raised by assessments, and both divided among the paupers, reckoning ten occasionally, as equal to one pauper constantly maintained, makes two hundred and thirteen paupers to be maintained in 1783, at the expence of 6l. 5s. 5d. each; two hundred and twenty-six in 1784, at 5l. 13s. 6d. each; two hundred and thirty-one in 1785, at 6l. 10s. 2d. each. This appears to be a large sum above that which must be

earned by most of them in the pursuit of their various occupations ; for it is by no means to be presumed that a great part of them are not capable of labour ; but as a deduction from this sum, it is to be considered, that about one-tenth of the money levied by assessment, is not applied to the actual support of the poor, but to other purposes ; and that also there is reason to believe, that many more individuals are supported than appear by the above return ; since the overseers in general did not, it is apprehended, take into account the number of children in a family to which they paid allowances, but only the number of adults to whom they paid it, and perhaps frequently reckoned the whole family, but as one individual in the return. These two circumstances taken together, will make a considerable difference in the calculation, but to what amount, cannot be easily estimated, and must be left to the judgment of every one.

At the period when the above return was made, it appeared, that in the above hundred, the highest rated parish paid under two shillings in the pound poor-rate, and that five townships had never yet raised any assessment for the poor, and were entirely exempt from any charge on their account ; and it is a circumstance deserving of much attention, *that the three market towns in the hundred were much higher rated than any other parish, and that the rate of assessment generally increased in proportion to the size and population of the parish or township ; and that the five townships that had never yet levied a poor-rate, were among the smallest in the hundred ; and also, that the poor were best attended to, and the least numerous in proportion, in the smallest and least populous townships ;* strong arguments these, against uniting great districts in the general maintenance of the poor, under the plea of their being better attended to, and maintained at less expence.

SECT.

SECT. V.—LEASES*.

IN this Riding, very few leases are granted, especially by the owners of large estates, or by long established families,

* By experience, I know that leases are not binding upon slovenly or bad inclined men, nor are they sufficient to conquer the ignorance of our common farmers.

There are various other methods well understood by intelligent country gentlemen, better calculated by far to effect those purposes. A man of sense will not injure himself or his estate, by oppressing or cramping a good and deserving tenant, and no lease, be its covenants ever so strongly worded (much less totally omitted, as is frequently the case), will make a bad farmer a good and desirable tenant.

The proprietor must of necessity be at the expence of buildings, find materials for all permanent improvements upon his land, and make reasonable allowance for an exhausted farm; and with such encouragement, I will venture to assert, no industrious well-meaning farmer will grumble to bestow his labour, although he have no lease.

If the tenant has these, and such like indulgencies, and still requests a lease, the landlord has fair room to conjecture, it is only for sinister purposes that it is required.

Leases are sometimes obtained by covert ways and specious pretences; perhaps to answer the views of a wealthy designing steward, whose chief intentions we frequently perceive, are how to obtain and tie up large portions of his unwary lord's estate, to the advancement of himself and friends.

To be sure, leases may sometimes induce tenants to advance a few steps towards trifling improvements, principally to answer their own convenience; but that they do not on the whole further the general weal of the country, is my firm opinion; and on my side, I think I have at this day a majority of sensible and disinterested men.

There is no man, let his rank and situation in life be ever so elevated, but he may, and frequently does his family or property great injury, by tying up his property for fourteen or twenty-one years; it may be done to-day with the best intent, and without the prospect of danger or loss to the proprietor of the estate; but what mortal has the privilege of reading the book of fate, or judging properly of eventful accidents: at this time the owner has no thoughts of sale—a very few years hence that step is necessary, then judge of the unpleasant situation he or his successors are thrown into.

It is not the opinion of this day, that the community at large can be hurt by the sale of large estates, or a subdivison in consequence thereof, therefore, by a parity of reasoning, any thing that tends to obstruct the free sale of estates,

lies, the occupiers of the soil being what are usually called *tenants at will*, holding their property by lease for a year ; and notwithstanding the supposed precariousness of this tenure, few parts of England can produce a tenantry, who, and whose ancestry, have lived an equal number of years uninterruptedly on their farms ; this, however, I do not apprehend in general to be a favourable circumstance for the interests of agriculture, such men, as I have before remarked, not being in general the most enterprizing cultivators ; but it has a tendency to shew, that permanency of occupation, one of the greatest sources of happiness to the farmer, is not confined to leases alone*. Experience nevertheless

where circumstances require it, cannot but be injurious. If the great would wish to improve their large estates, let them above all things endeavour to appoint a land-steward or bailiff of diligence, disinterested integrity, and skill in country business ; they may then have the satisfaction of seeing their estates prosper, and avoid the inconvenience of leases.—*M. G. Steele.*

* The Surveyor has properly hinted at the permanency of occupation and comfortable state of the tenantry, where they hold from year to year, but has not said enough on the subject. It is the popular fashion of the times, particularly in the southern part of this island, to rail at this kind of tenure, where it is unknown on a scale of any extent ; to assert that a country so held must be devoid of improvement, the tenantry oppressed, and the land-owners deprived of that share of rent which they ought to receive, were their lands lett on, what they call, a more liberal, durable tenure ; but one fact is worth more than volumes of reasoning or declamation : let us therefore see how the fact stands—the permanency of tenure under lease is held to be one of the greatest inducements to cultivation ; but with tenants at will, occupation is more durable than with the former. The occupations of the latter are rarely changed, except for faults, where, under a long lease, there ought to be change for the good of the neighbourhood and public, and where, as far as leases prevent such change, they are evils. Not an estate in this district, or other neighbouring ones, can be pointed out where the same families have not remained for generations on it, perhaps for many generations ; and to a length of time, which the Surveyor points out in some instances, as being attended with inconvenience, in being of so permanent and certain a nature as to prevent exertion : estates may be shewn, where not a family has been changed, or a new one introduced, in the memory of man : where the tenants have gradually risen from the smallest farms to the largest, and settled some of their children upon the smaller farms, to raise again in their turns ; while the parent has acquired property,

theless teaches us, that under some landlords, especially those in straightened circumstances, instances of which must be met with in every country, or where considerable improvements are to be made at the expence of the tenants, it

property, and placed others of his children in various other professions, superior to that in which he originally started himself. By long leases, I do not apprehend leases on lives are intended to be recommended, because all those parts of England where they greatly prevail, are under the worst state of cultivation; and in this part of England, particularly in this district, wherever we see such leases, we find nothing to recommend them, the farms being, with scarce an exception, worse cultivated than the farms of their neighbours, tenants at will, and the occupiers poorer; but it is to be supposed fourteen years leases are meant, which is looked upon as a reasonable term, a term as long as the tenant should expect, or the landlord grant; but in most parts of England, where such leases are common, the greatest part of the tenants are changed at the expiration of a lease; for no mutual tie of friendship, honour, or attachment, existing there between landlord and tenant, the former is bound only by interest to the latter; and the latter presuming upon the certainty of his lease, gives probably some occasion of offence, which is not forgiven when it expires; whereas in this country, a tenant would sit down very uneasy, under the apprehension of being removed at the end of fourteen years. Being well acquainted with some estates myself in this country, and having inquired into the practice of many others, I am satisfied that no such frequency of change takes place, on an average the tenants holding their farms for a much longer term. Another argument against this tenure is, that the tenantry must be uneasy under a liability to continual raisement of their rents, and a too frequent practice of it; but this keeps pace with the change, and no greater excess of it prevails than of the former; a much longer term runs than fourteen years on an average, between one raisement and another; an estate is seldom raised more than once in the life-time of the owner, and many landlords make it a principle never to raise a tenant to whom they have lett a farm; and some even make an agreement to the purpose, as long as such tenant shall conduct himself as becomes a man and a farmer. I believe this tenure to be in every instance in favour of the tenant, both for permanency of occupation and moderation of rent; for though the landlords here, get a handsome and sufficient rent, I believe something more would be extorted, were land of equal quality in leasing districts; but where a tenure is somewhat favourable to either side, it ought to be so to that of the tenant. For this possible loss of rent (for I am not certain that there is any such loss), the landlord has an ample return in the attachment and good offices of his neighbours: should there be no loss of rent, he is a great gainer indeed.

Again, it is said that this tenure is unfavourable to agriculture; but how is that the fact? where is the country in which greater exertions have been made, than

it is more advisable to be under greater certainty, though attended with greater rent.

In the neighbourhood of manufactures, leases are indispensable, because the manufacturer will give for his pleasure

than by tenants at will in this Riding, during the last thirty years? where is agriculture at this time more rapidly advancing? what country is better cultivated than the generality of the vale of York? what fields surpass those on Leeming-lane? is it not there that the hitherto unequalled rotation of turnips and grain, alternately, without any manure, is practised, and all the manure reserved for the grass-lands? where is the persevering industry of the Cleveland man surpassed, who, confiding in his tenure, will bestow an ample dressing of lime upon his land, after fetching it thirty or forty miles by land-carriage, at the expence of three days labour of his team? what part of England, on the whole, produces such live-stock? few parts surpass it in sheep, though the large original breed may be going out of fashion (for the fashion of stock fluctuates like other fashions), none surpass it in cattle, none equal it in horses. If these be facts, where is the injury this tenure does to agriculture? but there is another, and far more valuable character which this tenure possesses, which is entirely overlooked—its moral and political tendency is disregarded, or unknown; the tendency it has to make good neighbours, and orderly, virtuous citizens. In no country does there subsist between landlord and tenant, a more friendly intercourse, or more frequent exchange of good offices; this tenure operates like the marriage tie in countries where divorces are obtained with the greatest facility, because, being easily obtained, the good sense of the parties teaches them to bear and forbear, to correct their own faults, and to be lenient towards those of their partners; to live in mutual accommodation, not in mutual opposition; where such is the practice, divorces are never applied for: so it is here with the landlord and tenant; the tenant will not conduct himself in an unbecoming manner, because the consequence would be the loss of a good farm, and a good landlord; the landlord, for still stronger reasons, will not be guilty of vexation or oppression, because his character being forfeited, he would be unable to procure other tenants, than the outcasts from the estates of other people, to the certain ruin of his own;—can there be greater ties upon the conduct of both landlord and tenant? and such ties universally prevail with tenure at will, and are most powerful.

Besides, it is a remark which I have made during many years attendance at the assizes at York, that there is rarely more than one or two suits in a year, from the whole of this large county, between landlord and tenant, for unfarmerlike conduct, or breach of contract; while I have known in leasing countries, some scores of law-suits within that short period; scarce a lease expires there without application to a law-man, or court of justice; it is no slight recommendation, therefore, of this tenure, that it is unfavourable to litigation. There are circuits which would not be worth the attendance of the gentlemen
of

pleasure or accommodation, a greater price for the land than the farmer can give, consistently with his profit; the security of the latter, therefore, without a lease, would not be sufficient.

of the long robe, if it were not for the emoluments arising from the general practice of leasing land in them.

From observations I have made, it is evident that it is stewards who cry down tenure at will, and so highly extol long leases; they have a personal interest in the question; it is their business to extort the greatest possible rent for their employer, and their interest to do it with the least possible trouble to themselves: the influence of good-will and friendship is nothing to them; the comfort of the tenantry occupies little of their thoughts; they live an hundred miles off, or more perhaps; they hear no complaints; they visit not the estates except on a rent-day, and even then, if they be *great men*, visit it by a *deputy*, who has still less interest in it, or about it. Besides, long leases are favourable to, and encourage large occupations: a numerous tenantry is troublesome to stewards; but one great occupier of an estate can easily, through a banker, remit one large draft for his rent, which may save a steward a long journey: this is a strong recommendation. The favourable opinion of long leases which is held by land-stewards, is strongly evinced by looking over the original surveys laid before the Board of Agriculture: where the surveyor is of that description, we seldom fail to witness a pretty warm attack made on tenantry at will, and as warm a panegyric on long leases. In general, the southern surveyors condemn this tenure, who know little of it, except the trouble they experience in receiving northern rents; while it meets with praise from the northern surveyors, who are well acquainted with it. On the whole, it is clear, that where the gentry, as in the district under survey, live generally on their property, tenantry at will is by far the best tenure, keeping up a mutual dependance and intercourse between the higher and lower orders, between landlord and tenant; causing the former to be acquainted with the wants and circumstances of the latter, and to be ready to relieve them, and the latter to be influenced and directed by the counsels and advice of the former; bringing them, by a more intimate acquaintance, more to a level with each other; rendering both of them better men and better citizens. Where the landlords abandon their estates, as practised in many parts, and in some instances here, to the direction of stewards, leases may have the best effect, as rendering the tenantry more independent; and as they can get no assistance and advice from the influence and presence of their landlord, freeing them at least from the vexations, oppressions, and contempt of a distant steward.

But I mean not to say, that there is no reverse of this practice; there will be short-sighted, dishonest and beggarly landlords in every country, but such in this country make only an exception to a general rule, and it is believed, not a frequent one. It has always been held, that a good principle is not to be reasoned against on account of a possible abuse; for notwithstanding such an abuse, the principle will still remain good.—*W. S.*

The

The following are the most essential conditions of such leases as have been met with in the course of the survey. The first, is from one made use of by the owner of an estate near Scarborough, who is on the point of letting leases for fourteen years, in which there are many needless, and some unreasonable, clauses.

“ The landlord agrees to lett the tenant, his executors, administrators, and *limited assigns*, a certain farm for the term of fourteen years, with all its rights and appurtenances; reserving all mines, quarries, and royalties; and all timber and other trees, &c. with full power to view, search for, cut down, and carry away the same at seasonable times of the year, paying such compensation for damage, as two indifferent persons of equal degree shall award and direct. The landlord also reserves liberty to enter upon the said premises, to view their repairs and condition; and also for himself and attendants to take and pursue the game thereon, at his will and pleasure.

“ The term commences the fifth day of April, and continues after the expiration of the term of fourteen years, from year to year, so long as the landlord and tenant shall please.

“ Provided always, that if the rent of the said premises before reserved, or any part thereof, or the other occasional rents, shall happen to be in arrear and unpaid, by the space of twenty days, next after either, or any of the said days or times, whereon the same shall become due and payable, being first demanded; or, if the conditions, covenants, and agreements herein contained, are not duly performed, and fulfilled by the said tenant, his executors, &c. thenceforth the lease shall be void.

“ The tenant agrees to pay his rent by equal portions, on the 10th day of October and 5th day of April, free from all taxes and impositions whatsoever, parliamentary
or

or parochial (except the land-tax), the first payment to be made on the 10th day of October next ensuing after the execution of the lease. Also to pay all taxes and impositions, parliamentary or parochial, which shall, during this demise, be laid, or assessed upon the said premises*.

“ And also yearly, and every year during the demise, to lead or carry with their teams, on the customary days, called boon-days, to the hall or chief house, such articles as have been customary, or shall be required; and to perform all other suits, services, duties and customs of any kind, which are, or shall at any time be taxed, charged, or imposed upon the premises. The tenant to pay, with remedy and recovery by distress and sale, upon default of payment, the several additional rents herein after mentioned; that is to say, 10l. for every acre, and so in proportion after that rate, which he, his executors, administrators, or limited assigns, shall, contrary to the mode or course of agriculture and management prescribed, and expressed by the indorsement signed by the parties, plough, or dig up, pare and burn†, or keep in tillage, or otherwise convert to arable, without the special leave or consent of the landlord, in writing first obtained.

“ Also to pay yearly during the said term, on the half-yearly days of payment aforesaid, over and above the rent, the sum of 10l. for each and every acre of the premises hereby demised, and so in proportion for any greater or less quantity than an acre, if he, his executors, or administrators, shall at any time during this demise, directly, or

* Very unreasonable, from the uncertainty.—*Sir R. D. Hildyard, Bart.*

† Too much restriction may be laid upon this article, which, in most lands, is one of the greatest improvements: the alkaline salts obtained thereby, will amply compensate for the very small diminution of the soil occasioned by burning.—*J. H.*

indirectly, demise, lett, or assign over, or otherwise part with his, or their interest therein, wholly or in part (other than a cow-gate to a cottage holding under the said landlord), without special license and consent of the said landlord, in writing under his hand first had, and obtained for that purpose.

“Also to pay 10s. for every acre of land sown down with turnip-seed, which shall not be hoed, or shall be improperly hoed, or weeded contrary to good husbandry; or shall be eaten off, or depastured with any other cattle than sheep.

“Also to resort with his corn to the lord’s mill*, and to perform, and observe such rules, ordinances, and byelaws, as have been, or may be agreed upon, at the court-leet, and court-baron held for the manor; and to consume and eat with his cattle on the lands, or some part thereof, all the grass, hay and straw, which shall yearly grow upon the same, except what may remain in the last year of the said term, which shall be eaten betwixt Lady-day and May-day next after the determination of the said term, upon such part of the demised grounds, as shall be allotted or appointed for that purpose by the landlord; and not to sell, carry away, or dispose of any of the manure, dung, or compost, which shall be made upon the premises, but shall make use of the same upon his lands; and shall leave the last year’s manure, straw, dung, and compost produced thereon, for the benefit of the farm, receiving such compensation for the same as hereafter mentioned.

“Also to preserve and defend from cattle and other damage, all young trees and quick-set fences, which are growing, or during the continuance of the demise, may be set, and planted upon the premises. And not to burn

* Ought it not to be, provided the miller grinds his corn as well, and manages it as well as any other miller?—*J. Smeddle.*

any fern or whins to ashes, in order to sell them to the boilers, or makers of soap, or any other person whatever, without the special license of the landlord in writing.

“ Also, at his own proper cost, to employ such mole-catcher for destroying of the moles within the said premises, as the landlord shall from time to time appoint and approve.

“ Also, at his own cost, sufficiently to cleanse and scour one-sixth, or such other part of the ditches and water-courses, at least once in every year, as the landlord shall direct. And to uphold and keep in repair, all the houses and buildings on the premises (such houses and buildings being first put into repair, and the helms or shades covered in, at the expence of the landlord).

“ Also, not to sow down any part of the premises with rape, hemp, woad, weld, madder, or hops, without leave in writing for that purpose first had and obtained from the landlord : and not, in any one year during the demise, “ to plant with potatoes any greater quantity than one acre and an half of ground * ;” and that in the same field sown, or intended to be sown with turnip-seed, and no where else ; and not in the last year of this demise, to sow down with wheat, any greater quantity than one-fourth part of the land occupied in the regular and prescribed course of tillage, the crop of which shall not be taken away from the premises ; but shall be left for the benefit of the farm, such compensation being paid for the same, as thereafter mentioned. And that after the lands shall be brought into a regular course by the method or mode prescribed by the indorsement, not to have more from that time forward, than one-fourth of the land in tillage, sown down with wheat in any one year during this demise.

* If every farmer is allowed to plant no more than one acre and an half of potatoes, will there be a sufficiency for the markets ? if the restriction was general, would not the poor people be injured ?—*J. Smeddle.*

“ Also,

“ Also, during the continuance of the lease, not to stock any part of the lands with rabbits.

“ The landlord agrees to allow the tenant, his executors, &c. on his leaving the farm, for the *clots of turnips and wheat* * sown in the last year of this demise, and for the manure produced in such last year, and also for such part of the hay and straw, as shall not be eaten and consumed, such price, as two indifferent discreet persons, chosen by the landlord and tenant, as arbitrators, shall award and direct ; whose determination shall be final and conclusive. The crop of wheat to be viewed and valued in the month of August or September, before the cutting of the same ; the tenant paying, or allowing out of the money so to be awarded, for the land so sown down with wheat, one year’s rent, clear of all deductions.

“ Also, that the tenant may have for the use of the farm and premises (only) from the quarries, any quantity of limestone, paying to such person as shall be appointed to get up the same, the sum of 4d. for each waggon-load.

“ They mutually agree, that in case of any difference about any matter respecting the demised premises, which is not before provided for, it shall be determined by arbitrators and an umpire, chosen in manner aforesaid. And that it shall be lawful for the new, or on-coming tenant, his servants and workmen, with or without horses, and other cattle and implements of husbandry, at all times in the proper season, between Michaelmas and Lady-day in the last year, to enter upon the said premises, to dress the meadow and pasture ground, and to plough and work such

* That is, for the improvement that shall have been made by preparing the land for a crop of turnips ; and by having eaten the turnips upon it, during the winter preceding the 5th day of April, when he quits his farm ; and likewise for his expences in cultivating the land, and sowing it with wheat in the preceding autumn ; and if sown upon a fallow, then to allow a year’s rent, exclusive of the above expences.—*J. T.*

part of the land, as shall by the said scale of husbandry be specified to lie for the next summer fallow; and to plough and sow with spring corn, such other part as shall not have been fallowed the preceding year; or, as it shall be necessary in the course of tillage, to sow down with such grain, without paying or allowing any thing for the same to the tenant.

“ And lastly, for the true performance of all the covenants, &c. herein contained, the tenant binds himself in the penal sum of three hundred pounds*.

SCALE OF TILLAGE.

No.	Quantities	Year 1780.	1781.	1782.	1783.	1784.
1	2 3 22	Turnips	Oats, with grass seeds	Grass		
2	4 2 26	Oats	Fallow	Wheat	Turnips	Oats with clover
3	3 0 36	Barley, turnips	Oats, potatoes	Ditto	Ditto	Ditto
4	3 3 33	Fallow	Wheat	Turnips	Oats with clover	Clover
5	3 3 0	Ditto	Ditto	Ditto	Ditto	Ditto
6	5 1 19	Wheat	Oats	Fallow	Wheat	Turnips
7	2 0 11	Ditto	Ditto	Ditto	Ditto	Ditto
8	5 1 22	Ditto	Turnips	Oats with clover	Clover	Wheat
		Grass	Grass	Oats	Fallow	Ditto

“ Succession of tillage after the completion of the above scale.

“ First—Turnips, with one acre and an half of potatoes, in the same field.

“ Second—Barley or oats, with clover-seeds, fourteen pounds to each acre.

“ Third—Clover, the first crop mowed, the second crop eaten off with sheep.

“ Fourth—Wheat on the clover stubble†.

“ In

* Were no farms lett upon any other conditions, the proprietors should be the occupiers, for me.—W. M.

† Since the above scale was adopted, it has been found that all the land upon this estate (it being of different qualities in different parts), will not bear the

" In laying down the land to grass, not less than one quarter of hay-seeds, and twelve pounds of dressed seeds, such as red clover, white clover, rib-grass, and trefoil, to be sown on each acre.

" N. B. Since the above scale was adopted, it has been found that the land will not bear the clover husbandry in a constant round: therefore it has been changed to turnips, barley, or oats, grass-seeds three years, and then to be ploughed up for wheat*.

" Penalties in the indorsement.

" Tenant to lay three chaldrons of lime
(each chaldron consisting of 32 bushels),
on each acre designed for turnips, or

clover husbandry in a constant round; therefore, by the advice of a skilful cultivator, it has been determined to govern the high lands by the following rule: after setting aside such pieces as the landlord may direct to be continued in old pasture and meadow, the remainder to be divided into two equal parts, one of which shall remain in pasture, the other be put in tillage under the following course, viz.—1-sixth wheat, 1-sixth turnips after wheat, 1-sixth oats or barley after turnips, with which grass-seeds are to be sown; 1-sixth seeds of one year's lying; 1-sixth seeds of two years' lying, and 1-sixth seeds of three years' lying, to be succeeded by wheat. When this half has undergone two rounds of this husbandry, the tenant to be permitted to take the other half of the land allowed to be in tillage, and to continue two rounds as above, on condition that the former half permitted to be taken up, be laid down in a proper manner for grass.

The quantity of seeds to be sown on each acre the first round, is as follows, viz. 7lbs. of white clover, 7lbs. of rib-grass, 3lbs. of trefoil, and four bushels of hay-seeds; and for the second round, when the land is purposed to be laid down to grass, till the last half of the land allowed to be in tillage shall have gone through its course, the following quantities of seeds are to be sown on each acre, viz. 5lbs. of white clover, 5lb. of rib-grass, 3lbs. of trefoil, and eight bushels of hay-seeds. When that part of the land allowed to be in tillage has gone two rounds, the tenants are permitted to go through the same succession of management.

In other parts of the estate the turnip and clover husbandry still goes on, the land being able to bear it. In others again, the old husbandry of oats, fallow, and wheat, is found to be the best, laying down with grass-seeds as the land seems to be wearing out.—*Sir R. J. Vanden Bempde, Bart.*

* The folly of subjecting tenants to covenants, is evident from this instance. If the landlord had insisted upon a rigorous performance, the tenant might have been ruined.—*Anonymous.*

fallow

- fallow for wheat, or pay for each chal- *l. s. d.*
 dron omitted - - - - - 10 10 0
 " To consume on the premises all the hay,
 straw, and manure, or pay for such a load
 of hay sold or carried off - - - - - 2 0 0
 " A thrave of straw, do. do. - - - - - 0 2 0
 " Cart load of manure - - - - - 0 5 0
 " N. B. To have ground assigned him,
 whereon to eat (between Lady-day and May-
 day) what hay and straw may be left uncon-
 sumed of the last year.
 " To employ the mole-catcher, as before
 mentioned, or pay for each acre of ground
 contained in his farm, - - - - - 8 1 0
 " For every sale, or lot of brakens for burn-
 ing (without leave), to pay - - - - - 10 0 0
 " Working or digging any mine or quarry,
 to pay - - - - - 10 0 0
 " To plash hedges at such seasons as the
 owner or steward shall appoint, and in the
 mean time to keep the young hedges pro-
 perly weeded; or for every year it shall
 be omitted, to pay - - - - - 10 0 0
 " To pay such sum of money for repairing such
 buildings (as were in good repair at, or put in repair
 since the time of entering), and for repairing such fences
 as shall be estimated by proper workmen, to be appointed
 by the owner, receiver, or steward; after the arbitrators
 or umpire have determined whether they are, or are not
 in proper repair, &c.
 " For neglecting to thatch all, or any part of the
 houses or out-houses, to pay such a sum of money as will
 completely repair the same, to be estimated by a thatcher

or other proper judge, to be appointed by the owner, receiver, or steward*.

“For selling or lopping any kind of trees (except hazles and thorns for hedging, in places to be assigned him), to pay treble the value of such trees †.”

○ The tenant being bound “to resort with his corn to his lord’s mill,” appears to be an improper tie; for if the tenant suspects the miller’s honesty, or if he does not do his business properly, it is unreasonable that he should be bound to employ him, and checks also in the miller, that obligation and gratitude which he ought to feel towards his employers.

A scale of husbandry, if properly adapted to the soil, to be annexed to the lease (with a proper liberty to vary as the seasons may require), I think an excellent plan.

○ In the northern part of the vale of York, I met with another lease of a farm of about 550*l.* per annum, some of the covenants of which not being very common, I shall here insert:

“The landlord agrees to lett the tenant the specified premises at the rent therein mentioned.

“The buildings, fences, gates, &c. to be all in good repair at the time of entry.

“Tenant agrees to pay all taxes and assessments, excepting the land-tax.

* An encouragement to waste manure.—*Sir R. D. Hildyard, Bart.*

† Both the lease and the term are much too long; a lease of three or four years, with notice from either, and tenant to be allowed according to the custom of that part of the country, might answer all purposes.—*J. H.*

Would it not be advisable to have a penal clause, restricting the time of mowing the meadows? suppose the tenant was not allowed to cut any grass after July; indulgence might be granted by the landlord in very dry seasons like the present (1794). There is grass for hay yet (Sept. 12), uncut.

A restrictive clause respecting the time of cutting hedges, seems also necessary; the farmers often cut their hedges in full leaf, for the shameful purpose of fencing their hay-stacks.—*Cler. Ebor.*

“Also

"Also to keep all buildings, fences and gates in repair (casualties by fire, or violent storms of wind, excepted), the landlord finding all materials for repairs."

"Also sufficiently to hedge, ditch, drain, trench, fence, cleanse, scour, and keep up all the hedges, ditches, drains, trenches and fences belonging to the premises, and within two calendar months after notice shall have been given him so to do, or to repair any of the said buildings, &c. in case of default therein, that it shall be lawful for the landlord to employ proper labourers to do such repairs, &c. and that the landlord may enter into the said premises to distrain for all such expences, and at the end of five days, to appraise, sell, and dispose of the same."

"Also to carry the bricks, timber, and other materials used in repairing, provided the distance does not exceed five miles from the said farm-house."

"Also to make all such new fences, ditches, or drains, as his landlord shall think proper, the landlord finding quickwood and young trees, and paying half the workmanship of making such new fences, &c.*"

"Also to use and spread upon the premises all the hay, straw, turnips, clover, which shall grow upon, or arise from the said premises; and that all the dung, &c. arising from the hay, straw, &c. consumed in the first twenty years of the term, and all the ashes and manure produced in the messuages, &c. shall be laid and spread upon the pasture and meadow ground†; and that the dung, &c. made in the last year of the said term, shall be left for the

* It should rather be—The landlord to make all such new fences as the tenant shall think proper, the landlord finding quickwood and young trees, and the farmer paying half the workmanship of making such, and repairing them at his sole expence.—*J. Smeddle.*

† This is a most abominable covenant; I recollect it being execrated by all good farmers thirty years ago, and hoped it had been before this totally extirpated.—*John Bailie.*

use and benefit of the landlord, or the on-coming tenant, without any allowance for the same *.

“ Also, that a fourth part of each portion or division of arable land, shall be summer fallow, or turnips, and shall have laid upon it not less than two chaldrons of lime per acre. One other fourth part barley, after turnips, with which twelve pounds of clover-seed shall be sown, and which shall continue in clover eighteen months from the time of sowing. One other fourth part shall be wheat, or oats, after clover, which shall be succeeded by fallow.

“ Another arable part of the said farm shall be one-fifth a summer fallow, with two chaldrons of lime per acre. Another one-fifth wheat or spring corn, after the fallow, with which shall be sown four pounds of white clover, five pounds of rib-grass, three pounds of trefoil, and six bushels of hay-seeds; which shall continue as pasture two years, from the time the wheat crop is taken off the ground, which may then be ploughed out for wheat, or spring corn, and the next year fallowed.

“ Another arable part of the said farm shall be managed as the last, only divided into six parts, and the grass shall lie three years. The penalty for non-performance of the above course of husbandry, five pounds per acre for all the land not so managed †.

“ Not to plough, or dig up any of the old grass land (except what is mentioned in the said lease), under penalty of five pounds per acre, to be paid as an advance of rent yearly during the remainder of the term.

“ If the tenant shall pare and burn, he shall lay on the land $1\frac{1}{2}$ chaldron of lime per acre, the same year it is pared

* A very good clause: the manure ought always to belong to the farm.—*J. Smeddle.*

† 'Tis hardly possible to determine, whether the several applications are just, or not, without knowing the nature of the soil to which they are severally directed.—*J. Smeddle.*

and burnt; in default of laying on that quantity of lime, to pay the last-mentioned penalty for every acre, more or less, not so managed*.

“Also, not to keep a larger number of cattle upon the farm the last year of the term, than has usually been kept†.”

In the northern neighbourhood of Richmond, there are many leases granted for seven, or fourteen years; but the covenants are not singular. They generally bind the tenants to scour annually one rood of ditching for every pound rent, and some not to take two crops of corn successively, and to plough out any fresh land without leave.

Where leases are not granted, special covenants are sometimes entered into; but often no others, than that the tenant shall not plough out fresh land without leave; and in the northern part of the Riding, tenants generally covenant to lay a certain quantity of lime on their fallows, at the rate of from one to two and a half chaldrons per acre||. Nevertheless, there are, upon a few estates, other clauses, which I shall here insert.

Upon another gentleman's estate in the northern part of the vale of York (not lett upon lease), tenants covenant not to sow two crops of white corn together**.

* Proper covenant, if the soil be of a black moorish nature, or coarse gravelly loam.—*J. Smeddle.*

† A very fair covenant for the off-going tenant, and no more than what is due for the on-coming one to have.—*J. T.*

|| If the off-going tenant have a year's notice of quitting his farm, he may perhaps hire a larger immediately after the receipt of such notice; in this case he would most certainly augment his stock in such a manner as his interest or opportunity might dictate: it would be very hard upon him, if his old landlord prevented him from providing a stock suitable to his new farm. Suppose he was prevented in the last year of his term from depasturing his land with any other stock save his own.—*J. Smeddle.*

|| Most of the lands in this district have been too much limed already.—*John Bailie.*

** Upon this estate, the tenants are not allowed to plant any potatoes, save for their own use.—*J. Smeddle.*

Also to give *one year's notice* of quitting the farm, and that year *not to make the fallow for the next* *; the landlord reserving a liberty for himself or his on-coming tenant, to manage such fallow.

The tenant also to pay his whole year's rent the Michaelmas preceding the leaving his farm, who consequently has no way-going crop when he leaves the premises†.

In these covenants, there are some things very new, particularly in that of the tenant not managing the fallow in the last year. It is desirable, if it can be done, for the tenant to have no right or interest in the farm at the time he quits it; for it is always unpleasant to an on-coming tenant to have the old one about his premises for so long a time as is necessarily the case, in some modes of entry and quittance. The above covenants seem in a great measure to do away that inconvenience.

When a tenant leaves his farm, he is entitled, by the custom of the country (if there is no covenant entered into to the contrary) to a crop from the land which was fallow or turnips during the year preceding the 5th day of April on which the term expires, as a compensation for the labour and expence attending such fallow, or crop of turnips, which the above is meant judiciously to prevent, in consequence of the great inconvenience arising from the custom.

* If he make no fallow for the next, his horses and servants will be unemployed a part of the year. Suppose fallow to be made, and the price of making such to be regulated by two discreet persons, chosen by the landlord and off-going tenant, and paid for by the on-coming tenant. If the mode was general, there would be no loss incurred by the off-going tenant, for he would be employed upon his new farm.—*J. Smeddle.*

† The tenant should be allowed to give security at Michaelmas before he quits, for the payment of his whole year's rent; it is hardly possible for him (except he be full-handed), to pay his whole year's rent at Michaelmas, without selling his stock to great disadvantage.—*J. Smeddle.*

In

In Cleveland, and in the northern part of the vale of York, the tenant enters upon the two-thirds of the ploughing at Candlemas (February 13th); the pasture land at Lady-day (April 5th); and the house and meadow land at May-day (May 12th, all O. S.) But the off-going tenant has the use of so much of the barns and field-yards, as is necessary for the thrashing out the corn, and consuming the straw of the crop, which crop is off the land which was fallow the preceding year.

The tenants of another gentleman, have their crop on two-thirds of the arable land, so that the on-coming tenant enters to no arable land, but that which comes in for a fallow*.

Some landlords in this part of the vale, insist upon turnips (even when eaten upon the land), being considered as a crop†. I understand it had its origin in this part of the country, with the late Earl of DARLINGTON, on the other side of the Tees, where it is now almost established as a custom‡. But they who have, or intend to adopt such a practice, ought to consider whether the land is not in a better state for a crop of corn, after a crop of turnips eaten upon the land, than after a summer fallow? and if the tenant were to sell the turnips (to be eaten upon the land), at the best price he could get, whether their value would be sufficient to repay him for his expence and la-

* New tenants are, not unfrequently, new-married people, whose united fortunes are sometimes not equal to the demand of a farm. In this case a farm at 100l. per annum would require more money (on account of the off-going tenant having two-thirds of the way-going crop), than another farm at 150l. per annum, the way-going tenant having only one-third. — J. Smeddle.

† Turnips fed off with sheep, are far superior to a dead fallow, and ought to receive every encouragement from the landlord. — E. Cleaver, Esq.

‡ Every on-coming tenant of Lord DARLINGTON's has the advantage of cropping the off-going tenant's turnip land. When the present on-coming tenant quits, can he complain? had he not the advantage when he entered? As he entered, so he quits. — J. Smeddle.

bour, in making such a fallow? and if it should appear that the land will produce a better crop of corn after turnips so consumed than after a summer fallow, and that the turnips in most cases would not be sufficient to repay the tenant, and leave him a reasonable profit, whether such a procedure is equitable?

In other parts of the North Riding, Lady-day is the time of entry to the whole of the farm, excepting to the land which was either fallow or turnips the preceding year, on which the off-going tenant has his crop; unless the on-coming tenant and he can agree upon a compensation for the fallow, which is very often done.

This section cannot be more properly concluded, than with the judicious remarks of our predecessor MARSHALL; what he says of the vale of Pickering, being generally applicable to the Riding.

“The time of the removal of tenants here, is invariably Old Lady-day,

“By the custom of this country, tenants at will are allowed to clear the premises previous to the day of removal, of hay, straw, and manure! quitting the farm on that day, and leaving it entirely naked of every thing, except the wheat on the ground; which at harvest he reaps and carries off! paying only for the “on-stand,” or rent of the land which the wheat has occupied*.

“A worse time, or a worse mode, could scarcely be devised. Old Lady-day is the middle of spring seed-time; stock are still in the house; the hay and straw partly eaten, and part to eat; and that time of the year the roads, having been soaked, and cut up during winter, and stiffened by the winds of March, are in their very worst state. These are disadvantages to the out-

* Barley sown before Lady-day, on fallow, is also the tenant's, paying the on-coming tenant for the on-stand only.

going tenant. The inconveniencies of an on-coming tenant entering upon a farm destitute of manure, and materials to raise it from, need not be enumerated.

“ In Cleveland, the time of removal is much more judicious. The on-coming tenant takes possession of the arable land at Candlemas, of the pasture grounds at Lady-day, and of the mowing grounds at May-day, when the out-going tenant quits every thing but the wheat.

“ These regulations are admirably adapted to *removals in spring*, and render them more eligible in many respects than *Michaelmas removals*, even when tempered with the Norfolk regulations. Old Michaelmas throws wheat seed-time too backward, and the unthrashed corn incurs a long, and frequently tedious connexion between out-going and on-coming tenants: besides, too, the hay, the turnips, the feedage of leys broken up, and of young clover after harvest, make a long account between them: whereas in Cleveland, the wheat on the ground, and perhaps a little remaining hay, are the only things to be valued (or removed), and the remaining wheat in the barn (if any), the only thing the out-going tenant leaves behind him. If the barns be cleared by May-day, which in general they may be without impropriety, the connexion between the out-going and the on-coming tenant (or landlord), dissolves entirely on the day of removal, which, namely, Old May-day, is an eligible season, and a leisure time of the year.

“ The chief inconveniency attending this mode of removal, is that of the on-coming tenant (residing perhaps at a distance) putting in the spring crops. But there is no day in the year on which this disagreeable business can be done without inconveniency to all parties; and all that can be done, is to find out such days, and fix upon such

such regulations, as will reduce the inconveniency within the narrowest bounds possible.

“ From the observations I have hitherto made, New Michaelmas with the Norfolk regulations, and Old May-day with those of Cleveland, appear to be the most eligible seasons for removal.”

SECT. VI.—EXPENCE AND PROFIT.

It has long been a prevailing opinion, that the produce of the farm should be equal to three rents; one for the landlord, one for the expences of cultivation, and another for the farmer. This might have been accurate some thirty or forty years since, when improvements were seldom made; and the system of three crops and a fallow was almost invariably pursued. It is at this time difficult to form an accurate calculation upon the subject, in consequence of the various improvements in agriculture which are taking place, and the various degrees according to which the disposition and purse of the farmer enable him to pursue them. In consequence of this change of system, as well as the great increase of taxes and wages, the land is cultivated at a much greater expence than formerly, and consequently ought to be much more productive to repay the farmer for his time and his skill, and a reasonable interest for his capital. A well-managed farm, two-thirds of which is arable, should not produce less than five rents, and these rarely leave the farmer much more than one rent, for the present maintenance of, and future provision for his family.

In general, the farmers in this country are apt to begin upon too small a capital; they are desirous of taking large farms without possessing the means, a great error, which makes

makes many a one poor upon a large farm, who might acquire property upon one that was smaller. To say what sum a man ought to possess by the acre, is hardly to be attempted; it must depend upon the value of the acre, and the mode of stocking and cultivation adopted; it may however be received as a general principle, that he who lays out the most upon his farm, will reap the largest return from it, supposing the money be expended with judgment.—

That the profits of farming are not too large, is evident from the few considerable fortunes that are made by it.—

A man of industry may, in the course of a long life, acquire a competency according to his rank in society, and if he can have placed several children during his life-time in a situation similar to his own, or be enabled to do it at his death, he may be said to have done much; more does not often occur, while such instances are daily met with in every other profession in life. Should a farmer make such a fortune, it is in general in consequence of his uniting some other profession with his farm; he is a land-surveyor, a steward, a corn-factor, or has some other pursuit; instances of fortunes acquired by such an union, may frequently be found; without it, the industrious, the orderly, the persevering farmer, the man peculiarly the pride and boast of England, is not often enabled to quit the path on which he first entered.

Few farmers keep accurate accounts, and such, the Surveyor has not been able to meet with, as might shew the precise expences and profits of a well-cultivated farm in his district; ideal calculations he has avoided, as tending to mislead the judgment, not establish facts. He therefore attempts no statement of the kind.

CHAPTER V.

IMPLEMENTS.

CARRIAGES.

IN the northern part of the vale of York, few waggons are used; the reason assigned for which is, that the country is hilly; many use two, and others three horse carts, with three inch wheels; but most of the farmers have carts which are unusually long in the body, and with broad wheels, for the sole purpose of carrying their hay and corn, and working upon the farm.

In the southern part of the vale, the Howardian hills, Ryedale, and the Marishes, waggons are pretty generally used, and large heavy carts drawn by two or three horses; though many farmers keep a light one-horse cart, for purposes where a large one is not necessary.

In the dales of the Western Moorlands, scarcely any waggons are used, but generally small narrow-wheeled carts, drawn by one horse.

These carts are made on several different plans, but always on a very cheap and simple construction. The body is usually framed upon the same piece of wood as that which forms the shafts; and when it is wanted to team a load, the horse is necessarily taken out of the shafts, which fly up as the tail of the cart descends. The wheels are sometimes solid block wheels, but these being found heavy, and apt to carry dirt, they are sometimes lightened, by being constructed upon a very simple plan, of five pieces of wood only, as is shewn in Plate vi. Fig. 1.

These

Fig. 1 p. 78

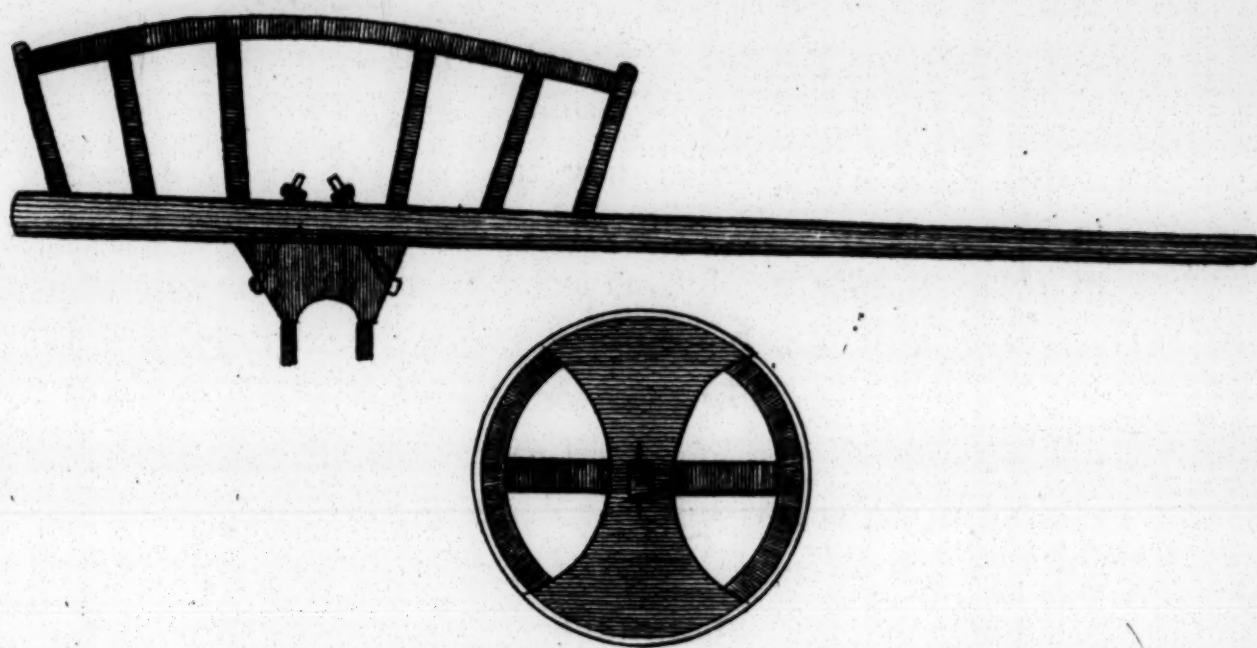


Fig. 2 p. 82

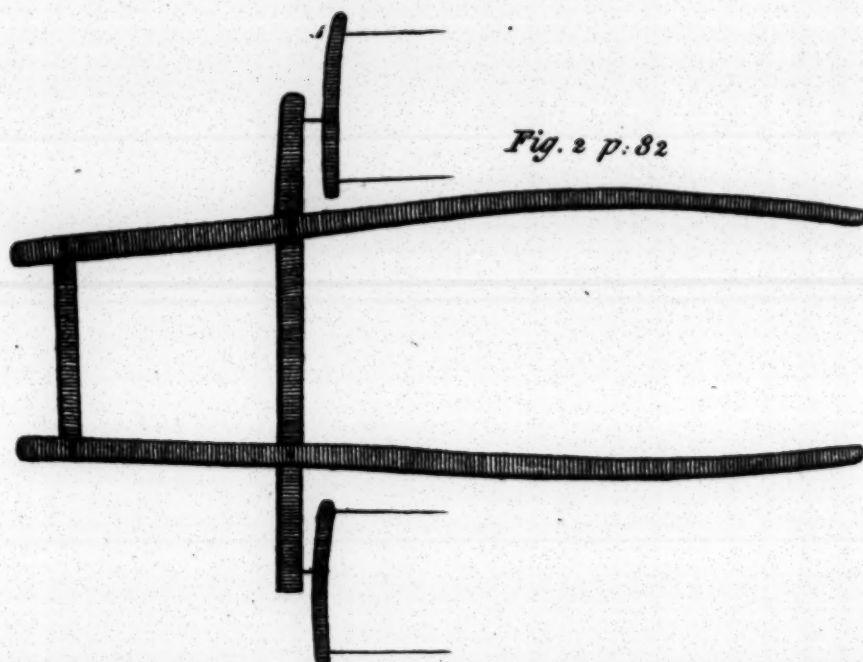
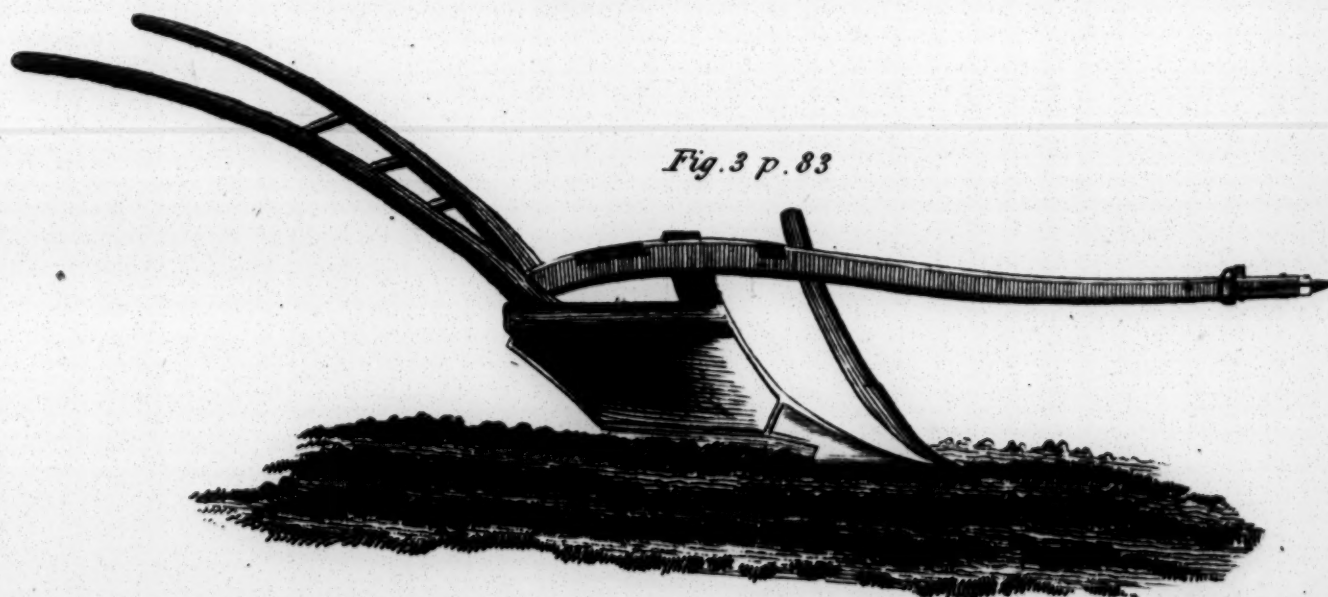


Fig. 3 p. 83



B&L

These wheels are generally fixed to the axletree, which, instead of being fixed, as usual, to the bottom of the cart, and having the wheels turning upon it, is detached from the cart, and fixed to the wheels, with which it turns, being kept in its place by two iron pins on each side of the cart. Other single-horse carts have wheels made in the usual manner turning on the axletree, but such are more expensive than the above described.

Single-horse carts drawn by an ordinary horse of about fourteen hands high, employed in carrying coals, usually take nine bushels; while a cart drawn by three of the same horses does not, and in this hilly country could not, draw more than twenty-one bushels; sometimes not more than sixteen or seventeen; and as one man can with ease look after three carts, the difference of labour performed by three horses in three carts, and that performed by three horses in one cart, is, at the lowest estimate, as twenty-seven to twenty-one, or a gain of near one-third, exclusive of a still farther considerable saving in expences of several kinds, and wear and tear. It cannot be too frequently pointed out, that the same, or a greater advantage, exists between single-horse carts, and those of larger dimensions, however employed, and in whatever country.

In the dales of the Eastern Moorlands very few carts are met with; generally small waggons, with low wheels, which do not contain more than from 12 to 20 bushels; to these they yoke two pair of oxen, with one or two horses before them. But on the verge of these moors, and on the coast, more carts are kept, and both the carts and waggons are larger than in the dales.

It is remarkable, that in these dales, waggons are generally used, because the country is hilly; but in the dales of the Western Moorlands, and the northern part of the vale

vale of York, carts are used for the same reason—so little has reflection and experiment yet determined.

In Cleveland, and that side of the vale of York contiguous to it, very few waggons are used, generally three-horse carts, which have the horses yoked to them after a singular mode, by putting one horse in the shafts, and two a-breast before him, each horse drawing by a swinging tree affixed to one end of the shaft, guided by leathern reins, and driven by a long thonged whip, in the coach manner. MARSHALL, who strongly commends this team, observes that “this practice has probably arisen from the circumstance of coals and lime being fetched into Cleveland from distant parts of the county of Durham. The latter, which has long been the sheet anchor of the Cleveland farmers, is drawn into the interior parts of the district more than thirty miles, the teams going and returning without a rest, excepting transient baits upon the road.

“The rule, when going empty, is to trot two miles, and feed one; the driver riding in the carriage the two miles, and walking by the side of his horses the one, baiting them with hay out of his hand, as they go along the road. When loaded, he keeps feeding whenever he finds the horses will eat a mouthful of hay. Corn is also carried in these journeys, and given in bags hung upon the horses’ heads, in the manner in which hackney-coach horses are fed upon the stands in London. Horses thus used, will stand travelling thirty miles every day. The breed, strong, active, coloured coach-horses.

“The Cleveland team treads the road evenly, and is the stiffest, the most handy, and, for a level country and long journeys, is perhaps altogether the most eligible team invention can suggest.”

All

All parts of the harness here are invariably made of white leather, which is less expence than tanned.

The bridle, too, is of a peculiar construction; the bit, a twisted ring, with one straight check under the jaw, to which the rein is fixed. This bit is extremely powerful, and renders their horses very manageable.

In every other part of the Riding, the horses are yoked one before another. I apprehend it admits not of a doubt, that three horses yoked in the former manner, will draw a greater weight than when single, and consequently that there is much merit in this management*.

Throughout the whole of the North Riding, wheels more than three inches broad are very rare; a few carriages are seen in the best cultivated parts, having six-inch wheels, intended chiefly to be used upon the farm, which are found a great convenience.

THRASHING-MILLS.

THE thrashing-mill was introduced into this Riding by E. CLEAVER, Esq. of Nunnington, about the year 1790, for whom RASTRICK, of Morpeth, erected one,

* The power of draught seems to be weakened in proportion to its distance from the weight, and is more effectually performed in proportion as the horses draw independently of each other (that is, without either being weakened by the friction of the other's draught), which appears to be the case when they work a-breast.—*Wm. Fox.*

A Gentleman who has travelled much in the United States of America, informs me that he has frequently seen and admired in the middle States of the Union, an improvement on this principle, which, by bringing the two first horses still nearer the weight to be drawn, than when fixed to, and drawing by the ends of the shafts, seems the utmost perfection of yoking three horses to a cart; all the three are a-breast, the middle horse being in the shafts, and the two outward horses drawing by a swinging tree annexed to the front brace

one, at an expence of about 100*l.* exclusive of a roof to cover the wheel and the horses whilst at work: this machine is wrought by four horses, and thrashes and dresses from twelve to fifteen quarters of wheat in twelve hours. Since that time their number has greatly increased, and many are now annually built at various prices, from 35*l.* to 150*l.* or upwards; they are constructed on several different plans, which are continually improved upon, and rendered more and more simple every year, and more efficacious with equal powers: none have yet been built here to go by water.

The common wrights are beginning to make them, and there is no doubt but that in a short time they will construct them as generally and as completely as they now do the winnowing machines.

With these mills, labourers will undertake to thrash and dress oats at 6*d.* and wheat at 1*s.* per quarter, the farmer finding horses.

The saving in the price of labour is not the only gain of the farmer; he and the public have another and great interest in the use of the mill; no corn is wasted in the straw, which is thrashed perfectly clean: in this some people reckon a profit of at least 5 per cent.; others, as equal to the seed and price of thrashing. Another, and great advantage arising from this machine, is that of being able to get the corn to market whenever there is an advance in the price, or to answer any sudden call that may arise, to the emolument of the farmer, and the benefit of the public*.

WIN-

of the shafts, which is extended on each side a sufficient length for the purpose. (See Plate vi. Fig. 2.)

Three horses yoked in this manner, will draw surprizing weights, if the roads be tolerably free from ruts; but if the roads be much cut up, the outer horses will have to walk in the ruts, which will fatigue them much.—*J. T.*

* These thrashing machines answer in a very beneficial manner; I have one built by RASTRICK, which thrashes all kinds of grain, except barley, very

WINNOWER MACHINES.

THESE are for dressing the corn when thrashed, and are come into very general use throughout the North Riding; the excellency of which, far surpasses any other implement or method made use of for that purpose.

They are made by carpenters or wrights, at about five or six guineas each.

PLOUGHS.

THE plough generally used throughout the North Riding, is called the Dutch Plough, (but why so named, does not appear); a short and light swing plough, and perhaps upon the best construction of any of that kind (See Plate vi. Fig. 3.): in the hands of a good workman, it performs its business well, and does not require a great force to work it. There are also a few Rotherham ploughs in the southern part of the Riding.

Ploughing is generally performed by two horses a-breast, driven by whip-strings held in the hands of the ploughman, except in the northern part of the vale of York, and in Cleveland, where it is common to plough with three horses, two a-breast and one before.

Turn-wrist ploughs are not entirely unknown; two or three may be met with in the Riding, kept for the pur-

very clean, and much more so than the flail; but in situations near great market towns, where straw is an object, I find that it breaks it too much, where it is intended for sale.

The price I give for thrashing and dressing wheat, is 1s. 4d. to 1s. 6d. per quarter; oats 8d. per quarter. I am told that Mr. THOMAS ARMSTRONG has a better than mine, at Raskelf.—*B. Cleaver, Esq.*

pose of ploughing steep hill-sides, to which they are peculiarly adapted.

A few gripping ploughs are also kept, for gripping the furrows of grass-land, which is found to be an advantageous practice ; but they cut out a sod about seven or eight inches in breadth, which is more than necessary to carry off the water ; and the horses, in working, poach the furrows very much.

GRIPPING SPADE.

THE breast gripping spade, which is in the hands of a few, is much to be preferred to the last instrument ; it cuts a grip about three inches in width ; prevents the inconvenience of poaching the ground by treading, and cuts the grip much straighter and neater than can be done with a plough.

This spade is made of a piece of thin iron, with a socket to admit the end of a shaft three inches broad ; each side of the iron is turned up, which cuts the side of the grip ; while the middle or bottom part of the iron cuts the bottom of the grip, and the shaft supports the sod cut out ; and a boy with a light spade throws it off, which expedites the business very much*.

DRILLS.

* A great objection, however, exists to the use of the gripping plough or gripping spade. Land that lies flat, does not often want much gripping, but land that by nature would lie flat, and which imperfect and ignorant cultivation has thrown up into high ridges, requires much draining ; but these instruments, which remedy the evil arising from too much wet one year, permanently add to the evil every time they are used ; they are worked in the lowest part of the furrow, in order to take away the wet, to effect which, a sod is cut out of the furrow, which either is spread upon the ridge, or entirely carried away : thus, every time the furrow is drained, it is rendered lower, by some of the earth being taken out of it, and consequently more liable to be injured by wet ; where gripping of this nature is practised, it ought to be done early in the winter,

DRILLS.

THESE are not general, though several are used in the northern part of the vale of York, and a few are in the hands of enterprizing farmers in other parts of the Riding; they are chiefly applied to the sowing of turnips and beans; some think they do not answer for other grain. The kinds are, the Scotch drill, for sowing turnips, Cooke's drill, and Perkins's drill, for sowing any grain; and Proud's drill for sowing turnips.

HARROWS.

THE common two-horse harrow is used to cover the seed, but in many places (though not generally) heavier harrows, with longer teeth, drawn by four horses, or a pair of oxen and two horses, are used to clean the land from quicks: each of them consists of four bars (here called bulls) in each harrow, with six teeth in each bull,

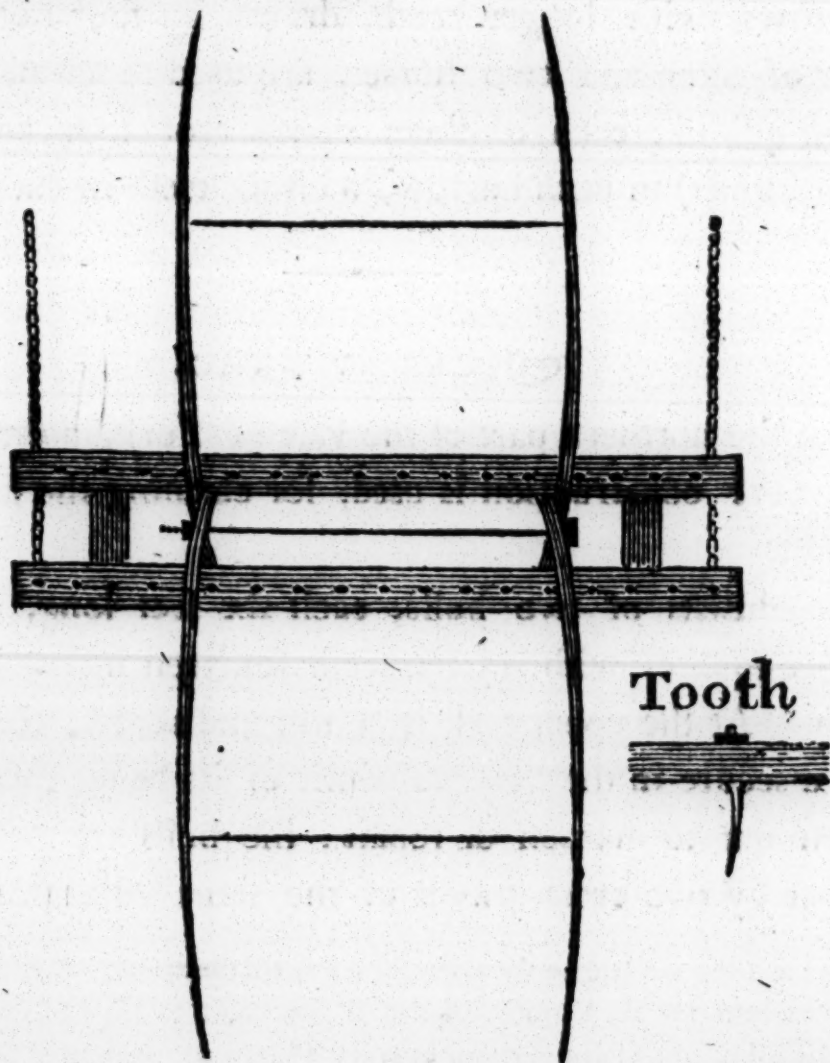
QUICKING DRAG,

IN the northern part of the vale of York, a drag on an excellent construction is used, for cleaning the land from quicks.

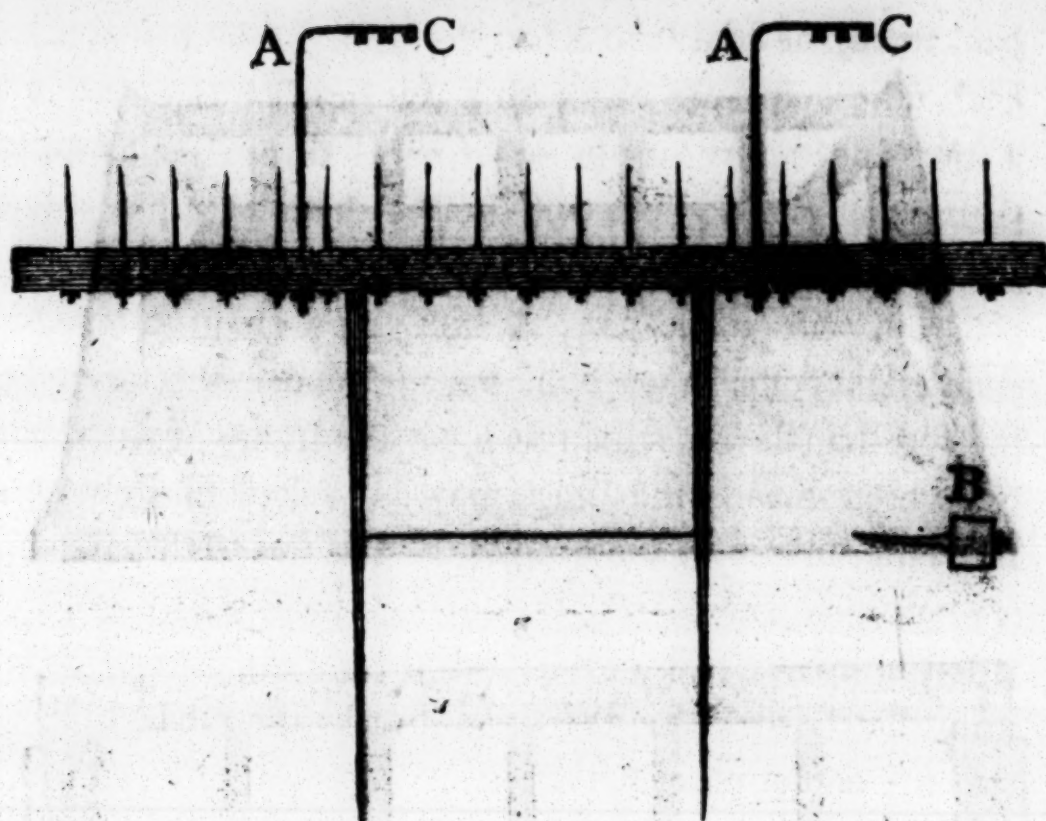
It consists of two bulls, each six feet long, and four inches square, with sixteen teeth fourteen inches long, in each. At the upper end is a nut and screw, to make it more secure in the bull, to admit of its being more easily taken out to sharpen or repair; the bulls are braced together by two cross pieces of the same substance, eight

winter, and the sod laid by the side of the grip till the spring, when it should be returned into the place from whence it was cut: this is the only method by which this kind of draining can be practised, without adding to the evil it is intended to counteract.—W. S.

inches long between the bulls: from each bull rise a pair of handles similar to those of a plough, the one reclining backward, the other projecting forward; where they cross each other, an iron bar with a flat head at one end, and a nut and screw at the other, goes through all four of them, and strengthens and braces them together; these handles, which point forward, rest upon the frame of a roller, to which the drag is hung by a chain fastened to each end of the hind bull, passing under the foremost; the fore-handles or stilts rest upon the frame of the roller, by which means the drag may be raised entirely clear from the surface of the ground, and as the teeth have but a very small curve, the couch very readily falls off, and is left in rows, ready to be raked up; the roller, which immediately precedes the drag, breaks the clods, and assists the operation of the latter.



STUBBLE RAKE.



A stubble rake drawn by a horse, is used in the northern part of the vale of York, for the purpose of raking the stubbles of mown corn: with this instrument twelve acres can be raked in one day, by one man and a horse.

AA, are two irons fastened into the bull by a nut and screw, and projecting from it two feet in an horizontal direction, and then turning up in a perpendicular direction one foot, from A to C; the perpendicular part having a few notches, to one of which in each iron the traces of the horse are fixed, and the requisite degree of hold which the rake is wished to have, is obtained by hanging the traces to a higher or lower notch.

B, a tooth and section of the bull, which are placed in the direction taken by them when working.

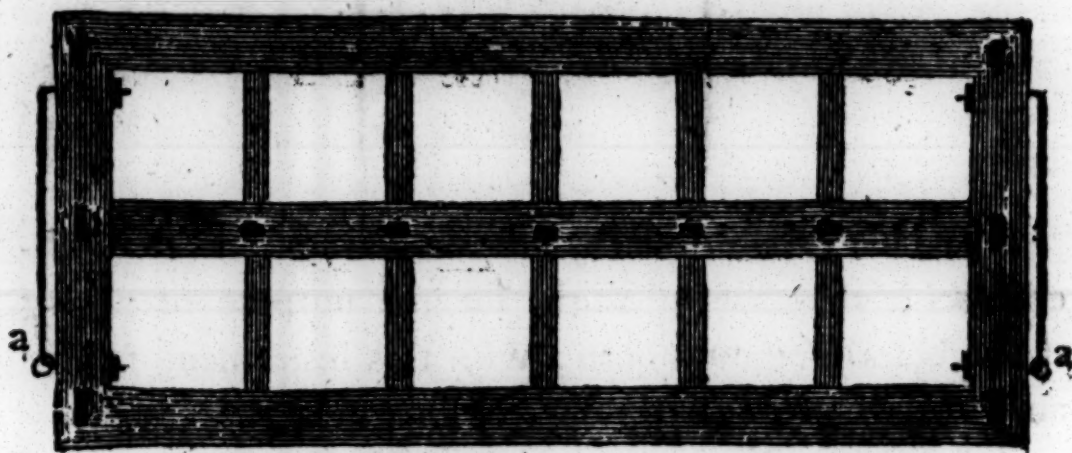
A man takes hold of the handles to steady it, and empty it when full,

HAY SWEEP.

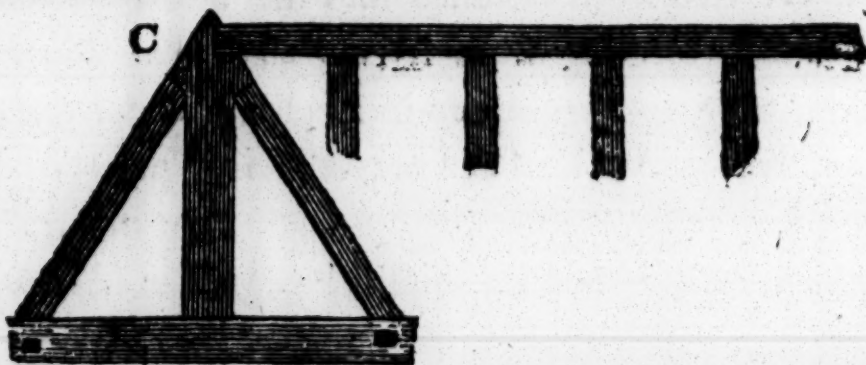
A



B



C



In several parts of the North Riding, a hay sweep is used for readily collecting the hay together, when raked into rows, and intended to be stacked in the field: with this implement, and two horses, the hay may be got together in much less time than with a carriage.

A, is a view of the whole sledge.

B, the

B, the frame of the bottom, which is boarded on the top side, as shewn at A.

C, is one end, with the top rail springing from it.

a, a, are two pieces of iron fixed on the frame with nuts and screws; on each side is a ring, to which the horses are hung, one horse going on each side of the row, whilst the sledge has got sufficiently loaded, when one horse crosses the row, and the load is taken to the stack: when arrived, the horses are turned about, and the rings run to the other end of the irons; the sweep is then drawn back (leaving its load), and proceeds to collect another.

CHAPTER VI.

INCLOSING.—FENCES.—GATES.

INCLOSING.

IN the best parts of this Riding, few open or common-fields now remain, nearly the whole having long been inclosed; the moors and mountainous parts still remain in their original state; but such is the spirit for improvement, that were the many obstacles removed that oppose inclosures, no waste lands would long remain neglected, that were capable of cultivation: and even under all the present difficulties, several inclosures, under acts of parliament, have annually taken place. But since this report was first drawn up, an almost total stop has been put to all improvements, and not more than one or two acts for inclosure in this Riding have been passed in 1797, 1798, and 1799.

In forming new inclosures, the fields are generally made too large: it was the opinion of that scientific farmer, ROBERT BAKEWELL, of Dishley, and which appears to have been well-founded, that fields of about five acres were the most advantageous size for the farmer: when he entered on his farm, which consisted of about 400 acres, it was divided into fields of twenty acres or upwards, which he subdivided into those of about five. Many are the advantages accruing from fields of about this size. In high and cold situations, when the fences are of quick-wood, with a few trees suited to the soil planted in them, the climate is ameliorated, and the fall of the leaf adds in some degree to the soil; the cattle and sheep thrive

thrive much better by being well sheltered, and in smaller lots; the farmer is more master of his farm and his stock, than when his fields are large; should his farm be arable, he could improve and cultivate in a superior stile, a field or two of five acres each, when he might not be able to undertake one of twenty; should it be in grass, it might be desirable to feed off some part of his stock, or he might wish to keep some part of it better than the rest—here he has the advantage of one or more small fields for the purpose, which he might alternately pasture or free while freshening; but where the fields are large, and consequently few in number, he has not that opportunity, by which a loss may frequently accrue; or should it be a growing season, he might spare a small field for meadow, though he might not be able to shut up the whole, or part of a large one, for the purpose. The objection, of so much land being engrossed by so many fences, will have no weight when the above advantages are considered, and also that the produce of the land is not thereby lessened, the warmth and shelter afforded by the fences promoting vegetation so as amply to make up for that deficiency.

FENCES.

WHITE thorn (provincially quickwood) constitutes the most common fence throughout the Riding, and is planted for fences when about three years old*; but in low and wet situations, crab makes the better fence, and is fre-

* Quick fences are slow in getting forward, and often broke down in winter by heavy snows. Having to stubb up a quantity of birch, willows, thorns, &c. they were cut down, and planted in a new bank raised for dividing a field: I have an excellent fence at once, and continue repeating this mode of fencing. Three or four years since I removed a quick fence of fifty years growth, which is now in a flourishing state.—*Anonymous*.

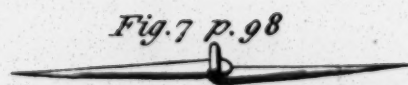
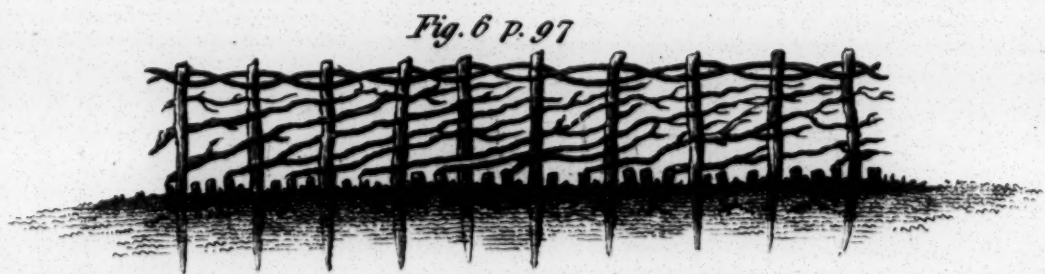
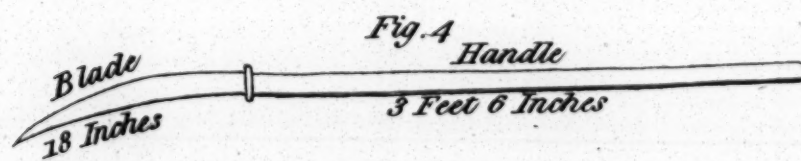
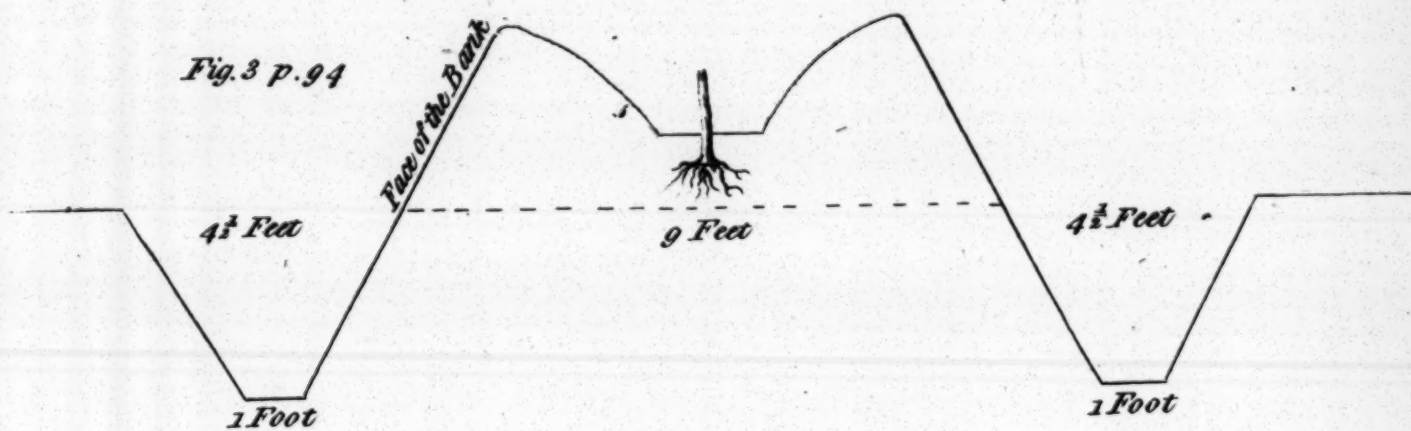
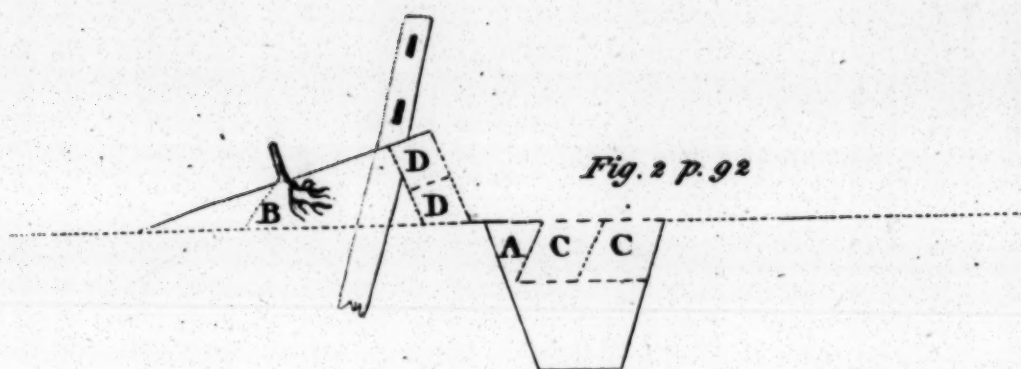
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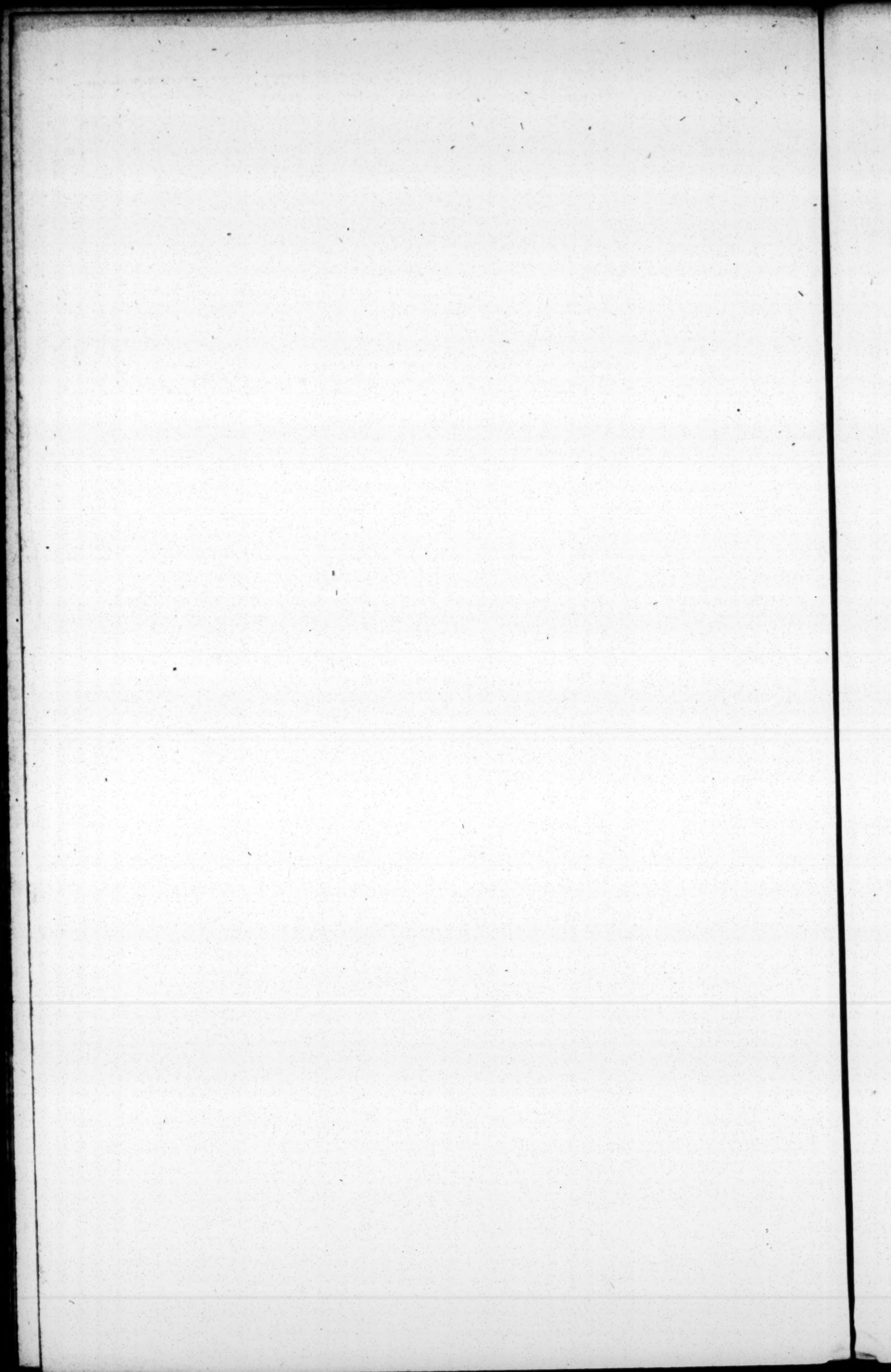
quently used for the purpose, such soil being congenial to it.

Where a ditch is necessary, the most prevailing mode of planting a hedge, is as described in Plate vii. Fig. 1.

Here A, B, represent the sods, and C, D, the mode of applying them; the sod A, is first placed with the grass side to the ditch, upon that edge of the bank on which the wood is intended to be planted; after that is backed and made firm with loose earth taken out of the ditch, the sod marked B, is laid upon it, with the grass side downwards, and is cut about ten inches broad; this is called the "cape sod;" the top and the back edge of it is then levelled with the spade, which reduces its thickness to about three inches; the plants, after being pruned to about four or five inches in length, are laid in a reclining posture against the sod, with the end about an inch above the surface; the roots are covered with some of the best of the earth, and the remainder of it, which comes out of the ditch, is thrown behind.— They are securely fenced with posts and rails on one side, as described in the sketch of it; and for six or seven years after, are, or ought to be, kept clean from weeds; but a manifest want of care in this respect, is too often to be perceived. To this mode of planting the quickwood, one objection occurs: after a few years, when the inner edge of the ditch begins to moulder and fall down, the root of the quickwood gets exposed, and the plant itself frequently falls down into the ditch, by which the future progress of the fence is much retarded, if the plant itself be not destroyed; to obviate which, another mode of planting the quickwood is sometimes practised, which, where it can be recurred to, makes a stronger fence at first, and ultimately a better hedge. (See Plate vii, Fig. 2.)

Here





Here A, B, represent the same sod, against which the quickwood rests while the bank is forming; C, C, the two remaining sods on the surface of the ditch; and D, D, their mode of application; behind these, the remaining earth out of the ditch is thrown. This mode of planting the quickwood can only be applied to, when the field is free from cattle, by being constantly under the plough, or other similar circumstances, or unless an inner fence is made to protect it; but which is attended with considerable additional expence and trouble. This always raises the best hedges, and the most expeditiously, and affords them while young the best protection, as the posts and rails forming an obtuse angle with the sods or turves, taken from the surface while forming the ditch, and hanging somewhat over it and them, completely defends them from external annoyance.

Fences of this kind may be made for 1l. 3s. 4d. per acre of 28 yards.

A roomstead (<i>i. e.</i> one post and two rails), being 1s. 7d. including carriage, ten and an half lengths will set one acre,	£.	s.	d.
Setting ditto per acre,	0	16	8
Two hundred and fifty of quickwood, set nine in a yard*,	0	1	2
Making the ditch (3 feet wide at top, 1 foot at bottom, and 2 feet deep), banking against the posts and rails, and setting the quickwood, per acre,	0	2	6
	0	3	0
	£.	1	3 4

Notwithstanding posts and rails are the common defence to young hedges throughout the Riding, yet I appre-

* In good land, no more than six or seven at the utmost should be in a yard.—*J. R.*

hend a cheaper and a better protection from sheep might be made, in the manner described by the sketch in Plate vii. Fig. 3.

The only objection to this mode is, that it takes up a considerable quantity of land, the space betwixt the outsides of each ditch being eighteen feet; but that objection is counterbalanced by the advantages of the quickwood being completely fenced on both sides from sheep, and the smallness of the expence of making it, wherever the soil is suitable for it to be adopted.

	s.	d.
Making two ditches, banks, and planting		
wood, per acre, - -	7	0
250 plants of quickwood, per acre -	2	6
	9	6

This might be made a complete fence against all kinds of cattle, with the addition of a brush of thorns, or a stake and edder hedge of a foot high, placed upon the top of the banks.

A singular instance of hedge planting is mentioned in the Rural Economy of Yorkshire, and as it is within the district under survey, is proper to be recited here.

“ The boldest idea I have met with in hedge planting, is that of *burying the plants!* by covering up their heads an inch or more deep with mould; and this not as an experiment, but in the practice of a common labourer.

“ The method of planting in this case is the common one, of setting the plants behind the “cape sod,” or first turned spit. But instead of leaving the heads two or three inches above ground, the plants are shortened, and the heads placed about an inch below the surface.

“ Observing a work of this kind presently after it was executed, I waited with impatience to see the event. In
due

due season the plants made their appearance; not in a number of irregular spreading shoots, as from an exposed head, but rising, as from seed, in one, or perhaps two or three, straight upright shoots, of peculiar strength and beauty.

"They did not, however, rise together, some of them remaining in the ground several weeks after the earliest made their appearance. The covering of mould therefore ought, perhaps, to be as fine, and laid on as light as may be, to prevent obstructions to the tender shoots in rising*.

"The advantage of burying quick, appears to be the valuable one of giving the young hedge an upright tendency, and thereby preventing the strength of the roots from being expended on useless side-shoots. Plants thus raised, take the growth, and probably the habit of *seedling* plants. The roots, in this case, may be considered as *artificial seeds*, furnished with a peculiar strength of vegetation."

There is an instance in the neighbourhood of York, of hollies being planted in a reclining position, along the line of the hedge, with their tops just above ground; though the business was performed early in spring, yet scarce one of the plants failed. Would not the same method answer for quickwood? I think it would be more likely to succeed than when totally buried.

There would be one considerable advantage in either of these methods, viz. the saving in plants, as one-third

* "On close examination, I find the tallest, strongest shoots arise from such as were barely, or perhaps impartially, covered with mould: such as were buried deeper, are at present (in the month of August, the first year of planting), shorter and weaker; owing, perhaps, to their rising later in the spring. It is therefore probable, that the lighter and thinner the covering, provided it be sufficient to prevent side shoots, the more eligible is this practice."—*Marshall's Rur. Econ. Yorksb.* v. i. p. 208.

of the number would do; and I apprehend that the part of the stem covered with earth, would strike roots downwards, as well as stems upwards, thereby attracting a greater proportion of nourishment.

The after management of those hedges admits of some variety; but it is very rare in this Riding, to see any under one that is good*. The following, which is the usual mode, is extremely bad, and certain in a short time to ruin the fence †.

When the hedge has acquired a pretty considerable degree of strength, perhaps at about ten years old, it is headed down to about two or three feet in height, by which the succeeding shoots rise from the top of the stems; in the course of a very few years, the lower part becomes naked and bare, many of the stems being at that time dead, and consequently the hedge full of openings; when it has again grown large, those shoots which rise from the top of the old stems are again cut, leaving only a few to be laid down even with the top of the fence; this is accomplished by making a nick on one side, which gives them sufficient liberty to lie in an horizontal position, being bent down on the contrary side to that on which they are nicked. (See Plate vii. Fig. 5.)

This mode of management makes a fence very unsightly, and never is sufficient to turn sheep, without the addition of dead wood.

Another mode of management, which is superior to the above, though not without its inconveniencies, is adopted by several farmers: this is called laying, or plashing the hedge, and is chiefly performed upon such as are

* After the planting of thorns, in three years time cut them down; your hedge will arrive at perfection much sooner.—*Anonymous*.

† The best hedges are made by beginning to cut them on each side, like the hog-mane of a horse, when the plants are about two feet high, with an instrument like the one described in Plate vii. Fig. 4.—*J. Carr, Esq.*

young:

young: the stems are cut off close to the ground, one only left in a foot, which is dressed up to near the top, and is nicked and interwoven in a reclining position, between upright stakes driven into the ground, at about the distance of half a yard; the top of the fence is then "bound" with hazels, or other small wood, which is twisted together, and incloses each stake; (see Plate vii. Fig. 6.) this stiffens the stakes, and keeps the layers in their places: from the bottom of the fence proceeds innumerable shoots, which form in about two years time a very thick young hedge; but the inconvenience is, that the layers in a few years die, particularly if they be strong ones, when the water dropping from them, and from the dead bindings, injures the tender wood beneath*.

A very few, when the fence wants renewing, and they can protect it from cattle for a few years, head the whole down to the ground; in consequence of which it puts forth a prodigious number of shoots. This is the best mode of renewing a hedge.

In the low grounds adjoining the river Derwent, in the Marishes, about Ayton and Wykeham, where drains are wanted as well as fences, two ditches, each eight feet wide, and sixteen feet asunder, are made; the soil which comes out of the ditches is thrown on the intermediate space, which is planted with bitter willow (*salix pentandria*) on each side, and alder and birch in the middle. This is at first a good fence, but it takes up much land, and is only to be practised where it is not very valuable: the space between the ditches is rendered very useful and

* This method is practised in some parts of Essex; I believe the same kind of inconvenience is found to be the result.—*Anonymous*.

In "laying" or plashing a hedge, if the stakes be driven into the ground in an inclining manner, either towards or from the ditch, the water falling from the binding, or from the layers, cannot injure the tender wood beneath, as it must fall clear of it.—*H. M. M. V.*

profitable to the farmers, by producing gate and stack bar-slices, hedge-stakes, wood for rails, and several other purposes.

In the dales of both the Moorlands, where stone is plentiful, stone walls without mortar, are the prevailing fence; they are made a yard and three-quarters in height, and are generally coped, either with large stones laid horizontally, or less stones set upon an edge. The price 2s. per rood (seven yards in length).

GATES.

THE gates in most general use in this Riding, are made with five bars, the braces of which are placed according to the fancy of the maker; the bars are generally made either of fir or ash, and the harltree and head, of oak or ash, but the former is the best for that purpose; they are hung with loops and crooks, made in the form of the sketch, Plate vii. Fig. 7.

The loop is driven into the harltree of the gate, and the crook into the gate-post. Gates hung in this manner, have nothing to support their weight but the adhesion of the loop to the harltree, by being driven in tight; the consequence is, the loop is frequently drawn out, and the head of the gate drops. An improvement of this loop has been adopted by some, which is attended with very little additional expence; the upper loop being made a sufficient length to go through the harltree, has a nut and screw at the end, as is shewn in the plan of a gate, No. 1. If the gate-head should sink, screwing that nut a little, raises it again. An improvement upon this again, is in some places to be seen: the gate is hung upon one loop and crook only, and the foot of the harltree having a spindle of

Fig. 1 p. 99

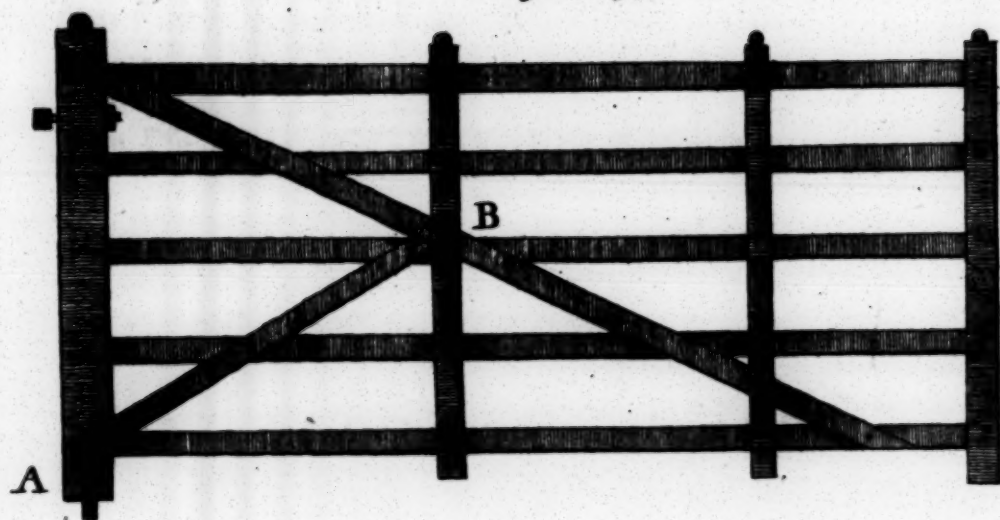
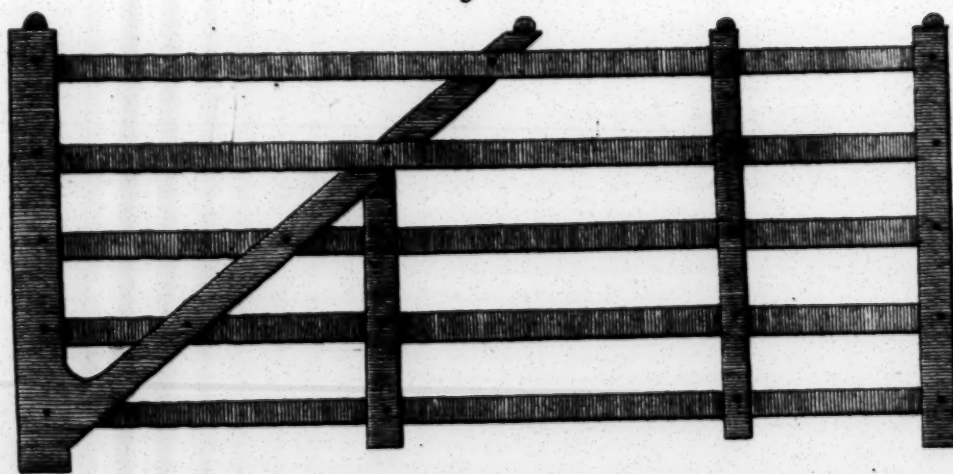


Fig. 2 p. 100



of iron fixed in its centre, rests upon, and turns in a hole suited to it, made in a large stone let into the ground near the hanging gate-post; not unfrequently the harltree turns upon the stone without any spindle, but the cup of the stone, made large to receive the wood, holds water, which soon decays it: where greater accuracy is required, a plate of iron, with a suitable hole in it, is fixed into the stone for the spindle to turn in. This is shewn in the plan of a gate, No. 1, Plate viii. Fig. 1.

The common farm-gates of this country are made upon no mechanical principle; they much resemble, and are neither better nor worse, than those which elsewhere occur; they generally consist of five flat bars, the flat side of which standing vertically, the wind acts upon them with great force whenever the gates are opened, and they are thereby either prevented from falling to again, or return with such violence against the falling post, as thereby soon to be broken to pieces. All gates, could it be accomplished, ought to be made with the flat side of the bars lying horizontally; but as this would be attended with some difficulty in the construction, square bars are the best, because they approach the nearest that is practicable, to the best principle. Gates, unless they are properly trussed, are liable to get out of the square, and fall at the head: this is either overlooked, or not in general well understood by carpenters; a very little addition prevents this inconvenience, and renders them far more durable: the sketch in Plate viii. Fig. 1, will shew what appears to be the best construction for a gate calculated for common purposes.

Here the truss A, B, abutting at the upper end, against the diagonal and vertical brace, and against the harltree on the other, as well as being firmly attached to it, prevents the possibility of the gate sinking at the head, or

getting out of the square: till this truss decays or gives way, no alteration in the gate can take place. It is for this reason, that a gate which is very common in Lancashire, and may sometimes be seen in that part of this Riding which is nearest that county, is particularly excellent as a farm-gate. (See Plate viii. Fig. 2.)

In this, the harltree and truss are made of the same piece of wood, a forked or grained piece of oak.—Wherever the fork that is to make the truss is perfectly even, and corresponding to that which is to make the harltree, each bar is let through both; whenever the truss is not perfectly even, the bar is firmly nailed to the truss; which different circumstances are expressed in the plan. The angle formed by the harltree and truss, must vary according as the wood suits. This probably, is the most simple and strongest gate that is made.

CHAPTER VII.

ARABLE LAND.

SECT. I.—TILLAGE.

IN the vale of York, one-third of the ground is in tillage, and two-thirds in grass. This is the common proportion; but where there are extensive open-fields, and in some places where the soil is light, the proportion of tillage is larger, and may amount to about one-half. On the western end of the Howardian hills, and from thence to Thirsk (being chiefly a dairy country), not more than one-fourth is in tillage; on the rest of the Howardian hills, near one-half.

Ryedale, the Marishes, and the northern part of the coast, have about one-third in tillage; the southern part of the coast about one-fourth; and Cleveland about one-half.

In the dales upon the eastern moors, only about one-fifth is in tillage; and in those upon the western moors much less. In Wensleydale, scarce any land is in tillage, except a little of an inferior quality, which lies near the moors, the humidity of the climate among these hills not admitting of tillage, with any prospect of advantage; but it is favourable to live-stock, from the abundance of grass which it produces. In the dales further north, rather more corn is grown than in Wensleydale; but the quantity even there, is very small. The inclosed lands in all those dales are chiefly appropriated to meadow; the

lower and better parts of the moors are mostly stinted pastures, on which the cattle are kept in summer.

Tillage is performed in the district under survey, with a slight-made, light swing plough, already noticed in the chapter on implements; generally drawn by two horses a-breast, and attended by one man or lad only, who guides them with whip-strings. With this draught the land is turned up about five or six inches in depth, or deeper if necessary, and laid in ridges or lands of various breadths, generally of about seven yards, which may be looked upon as the standard, from which no great variation is made, unless under particular circumstances, which do not often occur; or by some more intelligent farmer, who may not be bound by old customs, where a variation from them is an improvement. With this plough, and two horses of no great strength or value, most of the tillage of this Riding is performed, at a rate of one acre per day in winter, and upwards of one and an half in summer, and at an expence of from 5s. to 6s. per acre; much less than the sum for which the same is as well executed in most other parts of England.

A very general error prevails, in forming the lands both in dry and wet situations, much too high, for in some parts of this Riding they are thrown up much higher than is usually to be met with elsewhere, though less so at present than formerly.

In consequence of this depth of furrow, the difficulty of draining the land is not only greatly increased, but the fall into the general drains, or ditches, is much diminished, and the surface-drains, or grips for taking the water out of these furrows, are necessarily cut so deep across the lands, as greatly to increase the expence of making them, and render their sides liable to moulder down by the frosts, and thereby stop the course of the water. But still more pernicious

nieious consequences attend this practice: in dry seasons, the crops on the ridges of the lands are more injured by the drought, than if they were laid more flat; and if the land be strong, when the rains come they reap not their due share of benefit, in consequence of the water flowing off with too great rapidity; and the furrows are equally injured by a redundancy of it: from this cause, we frequently see the crops, for several feet on each side of the furrows, so poor and starved, as scarcely to return the quantity of grain that was wasted in their production; they are also generally well filled with couch, which very rarely gets killed by fallowing, the superabundance of moisture encouraging its growth, while it destroys almost every other plant that might be useful.

Where the subsoil is not retentive, the surface cannot be laid too even; and there the Kentish turn-wrist plough would be most advantageous, as it lays all the land one way level, and without making a furrow: as such land might still not be capable of taking a quantity of rain that might suddenly fall, slight grips in the lowest parts of a field would fully answer the purpose of laying it sufficiently *dry*. Where the bottom is retentive, the lands ought to be made about nine or ten feet broad, and only once taken up* with the plough; they would consequently have no greater descent than what would be sufficient to drain the superfluous water into the furrows, which being at so small a distance from each other, would not be liable to be overdone with water, which would flow from them without interruption into the general drains.

* Taking up, or gathering up the land, is so ploughing, as to ridge up the earth towards the top of the land, thereby leaving the furrow open;—open-ridged ploughing is the reverse of this, closing the furrow. By “lands,” are here meant what in some parts are called “steaches,” or ridges, a certain breadth of ground ploughed together, here recommended to be nine or ten feet broad.—J. T.

SECT. II.—FALLOWING.

A GENERAL opinion prevails among the farmers throughout this Riding, that dead fallows, or whole summer fallows, are necessary upon strong lands. In this case, the land is usually ploughed in the course of the winter, and remains in that state until the farmer has sown his spring corn, and sometimes his turnips. When that business is finished, it is the usual practice to cross-plough the land, and afterwards to plough it twice more before seed-time, and if it be infested with quicks or couch, to harrow it well after all the ploughings except the first. When it is free from this nuisance, it is frequently not harrowed at all, from an idea that the soil not being made fine, more readily admits the drought, to the destruction of the weeds, and that being a little cloddy when the wheat is sown, is advantageous to that crop, such land, when made too fine, being apt to run together, and bind too strongly with the parching winds in the spring.

There are other farmers, who do not plough the land intended for summer fallows until they have sown their spring corn; this practice is most common where the upper soil is thin, and the subsoil of a close retentive nature; which causes the former, if ploughed before winter, to be over-charged with water, and thereby lose a great part of its fertility.

When the land is intended for wheat, after a dead fallow, it is usual to spread lime or manure after the second or third ploughing; but if to be sown with barley in the spring, after such a fallow, the land is well gripped for the winter, and the manure laid on a short time previous to the last ploughing.

Whatever opinions there may be on the necessity of dead fallowing, there is not a doubt but that in a very considerable

siderable proportion, if not the whole, of this Riding, where fallowing is practised, green-fallows, or fallow-crops*, might be substituted, much to the advantage of the farmer ; but of these crops, only turnips on the lighter, and rape or cole-seed on the stronger soils, are generally had recourse to ; the latter, in most parts of the Riding, and on the various soils of it, is frequently sown on the fallows in the spring, to be eaten off chiefly with sheep in the autumn, time enough for wheat to be sown after it. This practice, which is still increasing, is found to be very beneficial †.

No crop whatever, leaves the land mellowed and in finer order for wheat, than well cleaned potatoes, when the land has been previously well manured ; and what is remarkable, such land is generally more productive than any other : some millers assert, that the wheat thus grown, yields more flour than what follows a summer fallow, or any other crop. This practice, on a small scale, is common in the North Riding.

It is a well known fact, that land which produces a luxuriant crop one year, will generally produce a greater the next year, than land of equal quality, and in an equal state of cultivation, the crop on which, by some casual circumstance in the season, seed, or otherwise, has been injured ; it should therefore seem, that land is more fertilized by a large crop than a poor one. This increased

* What is meant by fallow crops, are beans, peas, tares, buck-wheat, potatoes, turnips, or rape eaten with sheep, manured for, and kept perfectly clean by hoeing or otherwise.—*J. T.*

† I have met with two instances, one in Lincolnshire, and the other near York, of rye-grass being sown with the last crop before a fallow, which was eaten during winter and spring, until near Midsummer, and afforded an abundant supply of food during the time ; after which it was ploughed up to be fallowed for wheat : this, where the land is clean, and does not require to be winter ploughed, affords a great relief to the farmer for his stock in the spring, and is very profitable.—*J. T.*

fertility most probably arises from the shade of the crop, which may cause the air beneath to become stagnant, and a considerable putrefaction to take place, augmented perhaps by the additional quantity of roots and stubble remaining in the land, the produce of the preceding large crop. Be this, however, as it may, certain it is that land always turns up more mellow, and is in finer order, after a large crop than a poor one; it therefore follows, that if the land can be sown with a smothering fallow crop, or such a crop as will admit it to be frequently stirred with a plough, or hoed so as to destroy the pernicious weeds, and at the same time perfectly to shade and cover the ground, that it must be more profitable to the farmer, not only on account of the present profit of the crop, but also on account of the additional manure produced, and more favourable state of the ground for the succeeding crop.

The use of summer fallows is to destroy the weeds; but if the above facts and reasoning be true, which there is every reason to believe them to be, the exposure of the soil to the action of the sun during the summer, tends to exhale and destroy the productive powers of it, rather than add to them; or, at best, but prevents an additional destruction of its fertility, by destroying the growth of useless vegetables that would exhaust it; but from itself adds nothing to it.

If the land be very full of couch, it may be necessary to give it a dead fallow, not otherwise; but when the land is once clean, if care be taken not to exhaust it, which an alternate crop of corn and a green fallow crop will not do, summer fallows will be unnecessary; but how different is the general practice of this country! No sooner has the farmer got a piece of land into good condition by fallowing, at the expence of frequently not less than five pounds per acre, than he adopts the most direct method
of

of reducing it again, by taking two, and sometimes three exhausting crops of corn in succession. Thus is he employed in *doing and undoing*, the whole of his life.

SECT. III.—ROTATION OF CROPS.

THE soil, the climate, and the circumstances of the district under survey, are so various, that it is impossible to lay down any particular system or rotation, as the practice of the whole; besides, in a country, much of which is in grass, tillage will not have full encouragement, but be looked upon in those parts as a secondary consideration, and subservient to the purposes of breeding, the dairy, and grázing. In most parts of this district, scientific farming is still in its infancy; no system particularly adapted to it, can yet be said to have been hit upon; and rotations copied from other countries, without due consideration of their relative circumstances and situation, have not always turned out so well as had been previously expected: the following, however, is apprehended to be the general practice.

On strong land throughout the North Riding, the usual course is fallow; wheat, oats; sometimes beans, blendings (that is, peas and beans mixed), or peas are sown instead of oats; and not far from Easingwold on the west, fallow, wheat, beans or blendings; oats constitute the common course on strong land.

Some farmers in the northern part of the vale of York, have fallows, wheat, beans, or blendings, or early oats, upon *loamy and gravelly soils*; but a few, with more judgment, upon those soils grow turnips, barley, clover, wheat, and sometimes white peas, instead of the clover;

also

*also turnips and barley alternately**, the turnips being always eaten off with sheep, and raised, after the first time, without manure, except sometimes a little lime. Upon such soils, in the neighbourhood of Catterick, turnips succeed clover, in the rotation of barley, clover, turnips, and after the first crop, also without manure, they being eaten on the land with sheep as well as the clover, except that the first crop of the last is sometimes mown: both these courses are practised with good success, as by these means *the manure is spared for the grass land*. Near Be-dale, the course is sometimes turnips, beans, wheat, clover; then turnips again,

In Ryedale, and the Marishes, and in some parts of the vale of York, on the lighter soils, the course is turnips, barley, red clover, wheat; sometimes, instead of red clover, white clover, with trefoil, rib-grass, and rye-grass, or hay-seeds, are sown instead of the last; in which state the land continues for one or two years, and then is ploughed up for wheat, succeeded by turnips, and sometimes (though rarely) by a crop of peas or oats. Another course used there, is fallow, oats, wheat, though sometimes clover comes between the two last, particularly when the land is subject to chick-weed (*alsine medea*), which is very injurious to the wheat, but which is checked by the clover crop; also turnips or rape, succeeded by oats, for *four, five, six, or seven years* successively, may be met with in the almost inexhaustible fields of Ryedale, which are peculiarly adapted to the growth of oats.

* This is an extraordinary course, and worthy of being observed: by calculation, it appears to be more profitable than any other.—*J. T.*

I believe it will not be found to be so, when every thing is taken into the account for twenty-one years; the system of turnips; barley, or wheat; clover; for two or three years depastured with sheep; oats; will in twenty-years, I presume, be found more profitable, and the land more improved.—*John Bailie.*

There

There are some extensive open common-fields of fine turnip soil in the vale of York, on which turnips or clover are very rarely cultivated, the course upon many of which is fallow, meslin or rye, oats, though upon a few of them, turnips are grown by general consent; but unless the farmers are unanimous in their manner of consuming them, a considerable objection attends this mode of cultivation; for the best farmers (desirous that the turnips should be eaten upon the land), unite in selling their shares to a butcher or grazier; but there are other farmers who will pull their turnips, and carry them home, and consequently their lands receive equal benefit from the treading and manure of the sheep, with those of their neighbours, without contributing any thing in return; or perhaps more benefit, since the sheep prefer lying upon those bare lands, rather than upon such as are covered with turnips.

The act of parliament of the 13th of Geo. III. for encouraging a better cultivation of the turnip husbandry in open fields, is little known or attended to; but recourse has in some instances been had to it in Ryedale, where the turnips, having been sold, were eaten off by sheep folded on the ground with nets or hurdles, and great advantage has been continually found to arise from the practice.

The common course in Cleveland, and along the coast, is fallow, wheat, oats; or, instead of the last, beans, or blendings; turnips are there but little cultivated, even upon lands suitable for them. Farmers who grow turnips to pull off for their cattle, are esteemed bad managers, and I am informed that some have been restricted from growing them, except they were eaten with sheep upon the land.

When clover is introduced into the course, it is fallow; wheat, oats, clover, two years; but clover is in disrepute there,

there, and no wonder that it should, when grown in such a course.

SECT. IV.—CROPS COMMONLY CULTIVATED :
THEIR SEED, CULTURE, PRODUCE.

WHEAT.

Preparation.—Wheat is generally sown either upon a summer fallow, or a clover stubble, sometimes on a two or three years' ley, but oftener after a crop of rape either eaten off by sheep early in the autumn, or one that has stood for seed ; and almost always succeeds a crop of mustard, flax, or teasles.

The summer fallows are usually limed, at the rate of from one and a half to three chaldrons per acre ; but many farmers manure as well as lime their summer fallows of poor lands, either with the manure made upon their farms, or procured from the towns ; but this is generally done with a cautious hand on good land, for it is apt to make the wheat too strong, which causes it to lodge : in Ryedale, it is the practice only to lime for wheat, which is done in an extraordinary degree, five chaldrons per acre being frequently used. A few sow wheat after turnips, eaten off before early spring, which may be esteemed an improvement on a green fallow.

Sort.—The species of wheat which it is the general practice to sow upon the dry and best lands, is the Downey Kent, and sometimes, though not often, the Dwarf Kent ; the red wheat, and the Hertfordshire brown, are preferred for cold thin soils, upon which some have sown the awned six-rowed wheat, but it being flinty, is not much liked : the yellow Kent is sometimes met with upon the lighter soils ;

soils; but being more subject to shake out of the ear, and also to sprout sooner in a wet season than the other sorts, though a good wheat, is not so much in favour now, as some years since*.

Steeping.—In order to prevent wheat from being smutty or slain, brine, made of a sufficient strength to swim an egg, or instead of that, stale urine, has been generally used; in these the seed is put, and after being well stirred about, and the light grains that float to the surface have been skimmed off, it is taken out and mixed with a little fresh slaked lime; this forms a coat on the surface of the grain, and by imbibing the moisture, makes it immediately fit for sowing; but this method is rapidly giving way to another, which is thought a more certain antidote to the disorder, a solution of arsenic in water†. Nevertheless, a considerable inconvenience attends both these steeps in precarious seasons of sowing; for if the weather should be such, as to prevent the seed thus steeped from being sown within two or three days after it has been prepared, the vegetation of the wheat will be destroyed. A farmer in Devonshire made a very valuable discovery a few years ago, of the means by which this disease is propagated, and of the cure for it, which he proved by experiment at Lingcroft, as well as at several other places, to my full satisfaction. As the remedy is perfectly simple, and the use of arsenic is at all times so dangerous, and so many accidents have happened in consequence of it, it is the more desirable

* Red wheat, and a sort of wheat called brown Hertfordshire, are found to succeed after clover, and particularly after rape, upon light soils near the Western Moorlands: the rape must be eat off with sheep.—*W. Dinsdale*.

† “The usual method of preparing the liquor, is to boil one ounce of white arsenic finely powdered, in a gallon of water, from one to two hours, and to add to the decoction as much water, or stale urine, as will increase the quantity of liquor to two gallons.”—*Marsh. Rur. Econ. Yorksb.* vol. ii. p. 12.

that

that the practice should be known and adopted; nothing more is required, than that the wheat should be thoroughly washed, and in several waters, if it appear necessary. He proved the effect of it in the following manner: he took a small quantity of wheat of my own growth, not entirely free from the disease, then mixing some powder of the smut with two-thirds of it, he divided these again into two parts, one of which he washed clean, after which the three samples were sown in three rows in my garden. The result was, that the row of washed corn was perfectly free from smut; the row of smutted corn not washed, was generally smutty; and that which was sown in its original state, had a few smutted ears in it. I have continued this practice ever since, and have not known it fail. Whatever may be the original cause of the complaint, the above experiment proves, that it is continued by some portion of the diseased plant adhering to the seed.

Quantity of Seed.—Wheat is, with scarce an exception, sown broadcast. The usual quantity of seed in the northern part of the vale, and in Cleveland, is from five to eight pecks per acre, and in other parts from ten to twelve pecks.

Time of Sowing.—There are instances of wheat having been sown as late as April, and been found to answer extremely well. CHRISTOPHER WRIGHT, of Cleasby, informs me, that as good a crop of wheat * as ever he had, was sown the second week in April; as does also E. CLEAVER, Esq. of Nunnington, who sowed in the year 1793 about the beginning of April, and it answered well; and the stubble remaining on the field at the time of

* The wheat here mentioned as sown in the spring, was a white wheat, usually cultivated in this country, and not what is called spring wheat.—J. T. making

making this survey, evinced it to have been a most excellent crop*. But the common time of sowing is about the roth of October, or as near that time as can be done.

Culture.—Wheat is always rolled in spring, and if severe frosts return afterwards, it is rolled a second or third time. Hoeing is rarely practised, except by the few who sow wheat with a drill; but hand-weeding in spring generally prevails, which is done by women or children.

The practice of eating the wheat in spring with sheep, is not general, though it is done by many, and thought to have a good effect, particularly when the crop is thin, which causes it to branch more than it otherwise would have done.

Harvesting.—“No department in rural economy, distinguishes the *northern* from the *midland* and *southern* parts of the island, so much as the method of harvesting. And perhaps no northern district is more strongly marked with this distinguishing characteristic, than that which is now under survey.

“1. Cutting corn with the sickle.

“2. Cutting corn with the scythe.

* The sowing of wheat so late as Candlemas, or April, is very precarious; for if the summer be wet, the corn is little worth. I have frequently sown wheat upon warm turnip land, as late as Christmas, with great advantage; beyond that time, it is very lean in the ear, and is apt to be infected with the smut, or what we call the slain. Some years ago I sowed a field of turnip land, in a very wet season, as late as Candlemas, with $3\frac{1}{2}$ bushels per acre, and it was as good a crop as I have had at any time within twenty years: the produce was 42 bushels per acre, country measure, which is equal to 44 Winchester bushels. I attribute a great part of my success to the mode of steeping my seed, which was in oil and salt:

“Semina vidi equidem multos medicare serentes

“Et nitro prius et nigra perfundere amurca

“Grandior ut fœtus seliquis fallacibus esset.

VIRG. GÆO. LIB. 1. (L. 193.)

E. Cleaver, Esq.

H

“1st,

“ 1st, Sickle.—It is probable that nine-tenths of the corn which is cut with the sickle in this kingdom, is cut by men. In Surrey and Kent, a woman may sometimes be seen with a sickle in her hand. In Norfolk, it is a sight which is seldom or ever seen. Here it is almost equally rare to see a sickle in the hand of a man; reaping, provincially shearing, being almost entirely done by *women*.

“ Three women and one man make a set, who of a middling crop do an acre a day. If corn be thin, a man will bind after four women; if very thick upon the ground, he requires a boy to make bands for him.

“ Sometimes the bands are laid for the women to throw their handfuls into; but in general, they lay the corn in ‘reaps’ of about half a sheaf each; the binder gathering it up carefully against his legs, in the manner wheat straw is usually gathered on the thrashing-floor. This is much the best way (though somewhat more troublesome), the corn being by this means bound up tight and even, and the sheaves made of an equal size.

“ The day wages of a woman in harvest is 10d.; of a man 2s. Thus wheat, which in Surrey would cost 10s. to 12s. and which in any country I have observed in, would cost 7s. or 8s. is here cut for 4s. 6d. an acre*.

“ But the saving of so much an acre, is far from being the only advantage arising from the practice of employing women in the work of harvest. The number of hands is increased; the poor man’s income is raised; the parish-rates are in consequence lessened, and the community at large are benefited by the diffusion of a habit of industry, and an acquisition of health. How conducive to this are

* Since the above was written, wages are greatly advanced; 1s. 3d. per day for a woman, and 3s. per day for a man, is about the average price now (1798) given for labour in harvest.—*J. T.*

Women this year (1798) 1s. per day, and meat.—*J. R.*

the employments of husbandry, compared with those of manufactures; and the work of harvest, so far from being thought a hardship, is, by women who have been bred to it, considered as a relaxation from domestic confinement, and less agreeable employments.

“Wheat and rye are set up in shocks, provincially ‘stooks,’ of twelve or ten sheaves each, two of which are invariably used as ‘hood-sheaves, for hooding, capping, or covering the heads of the rest. Twelve sheaves are termed a ‘stook;’ in which wheat formerly was generally set up; but unless the straw be long, two sheaves are not equal to the safe covering of ten. It is therefore now the more general practice, to set them up in ‘tens;’ by which means they are much more effectually covered.

“In the south of England, the covering of wheat is never practised: here wheat is never left a day uncovered. Both practices are wrong: in fine weather the ears of corn cannot be too much exposed to the sun and dews; if the grain be thin, even a slight shower is of great benefit to it. In a rainy season, they cannot be covered too closely. Therefore, in the covering of wheat, as in many other departments of husbandry, the farmer ought to be directed by the season, not by the general custom of the country he farms in.”—*Marshall's Rural Economy of Yorkshire*, vol. i. p. 387.

These hood-sheaves being placed on the stook, with their root ends uppermost, have their heads carefully spread over the top of the stook; the ears thus reclined are safe from injury by wet themselves, and preserve also from almost any rain that can fall, the stooks which they cover.

In order the better to preserve the hood-sheaves thus placed, in their situation, a few straws, the usual thickness of a band, are taken from each side, but below the band,

of one sheaf, and form together a band, which, being carried round the other, binds them fast together, and consequently keeps both in their place.

Thrashing.—Wheat is generally separated from the straw by the flail; but thrashing machines are already erected in many parts of the Riding, and their number rapidly increases.

Produce.—The produce of wheat is various; though it is the staple produce of Cleveland, yet that district does not in general return so large a produce per acre, as some other parts of the Riding, where they are more in the practice of cultivating turnips, clover, and grass-seeds; yet it is mostly of superior quality, owing to the land having been so long in an arable state, and having acquired a great degree of stiffness by the long use of lime; three quarters per acre there, is esteemed a good crop; but in the best cultivated parts of the vale of York, and in Ryedale, from three and a half to four quarters per acre, are as frequently obtained; and crops of five quarters and upwards, are not rare.

No other district in the Riding, or perhaps in the north of England, produces so much wheat in proportion to its size, or of so good a quality, as Cleveland. Large quantities are shipped from thence, and sent to every part of the western coast of Great Britain; considerable quantities also go to Thirsk and Leyburn, which are bought up for the manufacturing parts of the country; and about twenty years since, the upper part of Ryedale was chiefly supplied with wheat from thence, many waggon-loads going weekly to Kirby-moorside market; but this is now wholly supplied by its own neighbourhood, which, after satisfying the home demand, now sends some to Whitby and Malton markets; from the latter place it is conveyed by water to Leeds, Wakefield, and the manufacturing districts, there to be consumed.

RYE AND MESLIN.

As it is generally found that light sandy soils, even after clover or grass, are not capable of producing a profitable crop of wheat, they are generally sown with rye or meslin; the quantity of rye to that of the wheat, being proportioned according to the judgment of the farmers, to suit the soil, the rule being to give the most rye to the lightest soil*.

Rye is frequently sown after early-fed turnips and summer fallows, when the land is too light for wheat: less of this is sown than that of wheat; one bushel, or five pecks of rye, being esteemed a considerable seed.

*Time of Sowing—Culture—Harvesting—and Thrashing—*are much the same as in wheat.

Produce.—From three to six quarters per acre.

Of meslin, the common household or brown bread is made, in families of every rank in the country, and more wholesome and nutritious bread cannot be used; no perceptible flavour or difference arises from the mixture of the rye, and the only effect it has, is to render the bread somewhat more moist, and to preserve it somewhat longer from growing stale; formerly, a very black, heavy, sour bread was made of rye, and is not yet entirely out of date, among the lower orders of the country; it is made in the following manner: a large tub, called a kimlin, is provided; this being only scraped, and not washed out, after

* A crop of meslin will be more valuable upon oat stubble than upon barley stubble. If I were to say that a crop of barley exhausted the soil more than a crop of oats, the public perhaps would not believe me. It is the opinion of many sensible farmers, that barley takes more hold of the land: hard corn, or meslin, sown upon oaten stubble, will give a proof of my assertion; the ground, when sown with barley, is frequently covered with a greenish canker, or mould. I never as yet had a reason assigned for this.—J. Smeddle.

each time of using, the paste which remains on the sides becomes sour; in this vessel about one half of the meal intended to be used, is mixed with water in the evening; this is covered up with some dry meal, and lies in sponge till morning; in that time, the tub has communicated its acidity to the whole mass, which causes a fermentation similar to that produced by yeast; it is then worked up stiff with the remainder of the meal; this is often done with the feet, the dough being covered with a coarse cloth; after it has thus been well worked, it is made into large loaves, and put into the oven, where it remains about ten or twelve hours. As this kind of bread will keep a considerable time, it is made in large quantities at once; three bushels at a baking is frequent, which quantity is made into seven or eight loaves: many farmers do not make this bread more than four, or six times in the year.

Rye is very rarely sown for sheep food, though there is no doubt but it might be done, on land which is intended for turnips, to the very great convenience and advantage of sheep farmers.

BARLEY.

Preparation.—This being by no means a barley country, much information cannot be expected on the subject; what is cultivated, is generally sown after turnips, and not unfrequently, after oats or wheat, in which case the land is usually winter-ploughed, and manured or limed in the spring; sometimes it is sown on a clover ley, and also on land summer fallowed the preceding year, the land being gripped and laid dry for the winter, and manured in the spring; which last practice is general upon a strong soil,

Sert.

Sort.—The species cultivated, is usually the long-eared barley; but that of the battledore, or sprat barley, is gaining ground; it is found to answer better than any other species upon rich land, the straw being stronger and more tapering than of the other kinds, and the ear standing erect; all which are means of preventing it from being lodged; the grain is also preferred by those brewers who are used to it*.

There are several plots of those species of barley called big, which is six-rowed barley; or bear, which is four-rowed†, cultivated in Ryedale, and in the dales of the Eastern Moorlands; the cultivation of them is the same as for barley, than which they are thought to produce a more abundant crop, and to thrive on poorer soils and more exposed situations; but in quality, are much inferior to the other kinds.

Quantity of Seed.—Ten pecks to the acre, is the prevailing quantity sown throughout the Riding.

Time of Sowing.—The time of sowing is from the latter end of March to the first week in May.

Culture.—Barley being rarely sown otherwise than broadcast, hand-weeding is the only culture given it whilst growing.

Harvest.—In the northern part of the vale of York, and in Cleveland, barley is mostly “shorn” with the sickle. In the southern part of the vale, and from thence to the Moorlands, it is mown with the scythe, and if many weeds, or much cultivated grass, are intermixed, it is usually mown outwards, and left on the swathe to dry, after which it is bound up in sheaves; but when un-

* Is the fact true or not, that malt liquor brewed from battledore barley, will not keep so long as from common barley? Some brewers assert this, but perhaps only with a view of keeping down the price of an article that is somewhat new in cultivation in this Riding.—J. R.

† Bear and big are winter barleys, and should be sown in autumn.—J. T.

mixed with other vegetables, it is mown inwards, that is, the mown corn falls against the standing corn; in which case each mower is followed by a woman, who makes bands, and puts the corn into a sheaf, with the assistance either of a sickle or a small long-toothed rake; a man, or stout boy following to tie up the sheaves, which are set up in "stooks, or "attocks," by the men, in the evening.

Produce.—Four quarters of barley per acre, may be considered as the average produce of turnip or fallow land.

Very little barley is grown in Cleveland, on the coast, in Ryedale, or the Marishes.

OATS.

Preparation.—Oats are very much grown throughout the whole arable part of the North Riding, and particularly in Ryedale, that district being as remarkable both for the quantity and quality of oats, as Cleveland is for that of wheat. The turnip land here is generally sown with oats, as is grass land always when first ploughed out; and instances are not wanting, where the attention of the landlord or his steward is deficient, of tenants taking six or seven successive crops of oats, all equally great in quantity and good in quality, without any other expence than once ploughing the land immediately before sowing it, and still without materially exhausting the ground, such is its extraordinary fertility, and so peculiarly is it adapted to the growth of this grain. Two crops in succession are always taken, and three frequently.

Sart.—The Friesland oat is generally preferred for good land, but when the land is of extraordinary fertility, the Poland oat is sometimes sown: an early oat, called the
Churchill

Churchill oat, is cultivated on land of a middle quality; and the Scotch, or Tartarian oat, on the inferior.

Quantity of Seed.—In the northern part of the vale of York, they sow the Friesland oat from four to five bushels, and in Cleveland about four bushels per acre; but on the best land in Ryedale, it is not uncommon to sow eight bushels per acre of Friesland or Poland oats; of the early oat, from four to five bushels; and of the Scotch, or Tartarian, from five to six bushels per acre, always giving the most seed to the land that is in the highest condition*.

All grain will degenerate, if sown for many years upon the same land, or perhaps in the same neighbourhood, but none suffers so great a degeneracy as the oat; the want of this knowledge, or the want of attention to it, may therefore account for this grain being so much inferior in some of the southern counties, to what it is in this district, and most of the northern counties. The oat in the northern part of England has every attention paid to the cultivation of it, which the farmer is induced to give it, perhaps, because it there constitutes in a great degree the food of man; and although, perhaps, not so much now as formerly, still an habit obtained, is long persevered in; great pains are taken, therefore, in procuring the best seed, and considerable quantities are annually imported in times of peace from Holland, probably the growth of the Low Countries, which are of a much superior quality to the growth of any other place from whence they can be procured. These the Ryedale farmer will purchase at a very high price, and he reaps the advantage of the change for four or five years, after which they begin to degenerate,

* I never sow less than six, seven, or eight bushels to the acre, according to the richness of the land: the higher its condition, the more seed it will carry. In poor weak lands, four or five bushels per acre are sufficient.—*B. Cleaver, Esq.*

and

and he is under the necessity of applying again to fresh seed. None having been imported for several years, a change is beginning to be wanted.

Time of Sowing.—The time of sowing, is from the last week in March, through the whole of April.

Culture.—No other culture is given whilst growing, than hand-weeding.

Harvest.—In the northern part of the vale of York, and in Cleveland, oats and other grain have, until a few years, been wholly cut with the sickle; but this practice is now giving way to the scythe, which is generally used for all grain in the other parts of the Riding, and in the same manner as when cutting barley.

In Ryedale, where oats are much intermixed with cultivated grasses, it is a prevailing practice to "gait" * them, that is, the sheaves are tied near the top, and set up single; when dry, they are tied in the usual place; the manner of performing this is so minutely described by MARSHALL, that I shall give it in his own words:

"In setting up singlets properly and expeditiously, there is an art and dexterity requisite, which can only be learnt from practice. The band being loosely tied at about the same distance from the head of the sheaf as it usually is from the butts, the binder lays hold of the ears with both hands immediately above the band, striking the sheaf down pretty hard upon its butts, in order to give it a flat, even base. One hand (the right, for instance) is then loosened, and inserted edgeway into the middle of the butts. The body, with the arms in that posture, is thrown forward, and brought round with a sweep to the right; thereby spreading the butts of the right-hand side of the

* The practice of setting up the corn in gaites, or single sheaves, is unnecessary, except in wet seasons.—*E. Cleaver, Esq.*

sheaf. The situation of the hands is then changed: the right is placed upon the ears, the left within the sheaf, bringing them round with a sweep to the left, leaving the sheaf a *hollow cone*.

“ If the face, in this operation, be turned toward the north, and in the last sweep an opening or doorway be left to the south, the rays of the sun will have admission to keep the ground dry within, and assist the wind in drying the inner side of the sheaf.

“ These particulars may on paper appear tedious, but in practice, an expert hand will go through them in a few seconds of time.

“ There is, however, a much readier way of setting up single sheaves, namely, by lifting them as high as the arms will conveniently reach, and bringing them smartly to the ground with a jerking motion, which spreads the butts, but does not give the desirable *hollowness*, nor the firmness which is necessary in windy weather.

“ When the singlets are dry enough for carrying, they are “ bound,” in the usual banding place.

“ In binding, the band is laid upon the ground, about a foot from the skirts of the singlet, which is pulled over upon it, and bound in the common manner. The original band of the first sheaf is pulled off for the second; so that without an accident, the first band only requires to be made at the time of binding. This renders the operation less than theory may suggest.

“ The sheaves, when bound, are collected into heaps, and carried on the day of binding; or are set up in stooks, as accidents or expediency may require.”—*Marshall's Rural Econ. Yorksh.* vol. i. p. 392.

Thrashing.—In Ryedale, a singular practice prevails, of thrashing out oats at the close of harvest in the open field,

field, or in the stack-yard*; sometimes upon a cloth, but often upon the bare turf: the following particular account of it is from MARSHALL'S *Rural Econ. Yorksh.* vol. ii. p. 21.

“A most *eccentric* practice has of late years taken place, with respect to the thrashing of oats; not in barns, or under cover, as heretofore, and, as the operation is still carried on in every other part of the island, but in the field, or the stack-yard, *in the open air*!

“This new method of thrashing oats, probably took its rise from the ordinary one of thrashing rape in this district (a process which will be explained by and by); the oats at the outset being all thrashed on *cloths*; but now I find it is common to thrash them on a piece of plain *sward*, or other level ground, *without a cloth*! it having been found, from experience, that if pigs and poultry be employed to pick up the few which the broom leaves, the waste is little or nothing.

“What may seem equally strange, this business is frequently done at harvest; the oats being carried immediately from the field in which they grew, to market.

“This, however, is less extraordinary, when we are acquainted with the market, which is always open for new oats in this country. The manufacturing parts of West Yorkshire use principally oaten bread, and new oats are coveted for oatmeal. This accounts for their high price at harvest here, compared with that which they bear in other places; and this was probably the inducement which led to the singular expedient under notice.

“The conveniency of thrashing them in the *field*

* This is a very slovenly practice, and only to be justified by necessity. When the roads are made tolerably good, this practice I hope will cease.—
E. Cleaver, Esq.

being

being by this means discovered, the practice was easily transferred from the field to the stack-yard.

“ In one instance, to which I more particularly attended, the operation was thus conducted—a cloth was spread upon the ground (first made smooth) by the side of the stack of oats (in a stack-yard); a boy threw the sheaves off the stack on to the cloth; one man opened and spread the sheaves, turned them when requisite, and threw off the straw when sufficiently thrashed; four men kept continually thrashing.

“ In another, the oats were carried from the field to a grass inclosure, and stacked in a place convenient for the expenditure of the straw. In this case the floor was a circle of close pastured green sward, about ten yards diameter, the opened sheaves being spread in a ring, with their heads towards the centre; eight or ten thrashers treading this ring with a slow pace. One side sufficiently thrashed, the other was turned uppermost, and the straw at length shook off the circle. Women were employed at the floor, while two men stacked the straw as it was thrown off; and while others were employed at the opposite side of the ring in winnowing the oats with a machine fan.

“ In a third, the oats were immediately carried out of the harvest-field to the thrashing-floor, without a previous stacking. In this case also, the floor was a ring of green sward, beaten firm and smooth with flails before any corn was laid upon it. The waste is nothing, compared with the expence of a cloth.

“ The straw was in every case stacked loose, to be cut out as hay; the common practice, I understand, when oats are thrashed abroad.

“ When the straw is thus freed from the corn at harvest, and is stacked in good order, it takes a heat
in

in stack, and is said to make excellent fodder. Cattle will sometimes get forward in flesh upon such straw alone.

“ But this happens in the rich land quarter mentioned above. And, query, has not a *rich soil* a similar effect upon the *straw*, as it has upon the hay which is grown upon it? The hay of Lincolnshire will fat large bullocks which that of Norfolk would barely support.”

Considerable advantages arise from this practice, which it is thought more than counterbalance any disadvantages. The corn being thrashed so soon after it is cut, measures much more than it would at a later period, when by drying, it has pined and lost considerable bulk; all waste by vermin is also prevented, and barn room is saved; these are general advantages, which might be applicable to any country; but considerations of a local nature appear rather to have caused the practice. The manufacturers of the West Riding consume chiefly oat-bread, and are fondest of the meal made from new corn; the best and earliest oats they can obtain are grown in this district, and sent to them through the medium of corn-factors at Malton, whither almost the whole produce of it is sent. The commodity which comes first to market, in oats, as in every thing else, bears a considerably advanced price; this the farmers of Ryedale enjoy almost exclusively for several weeks, until a more general supply reduces the price to the general standard; and they have adopted this mode of taking the advantage of their situation. The extreme badness of the roads from hence to Malton, which in winter are scarcely passable with a carriage, may likewise have had some influence, by rendering them desirous of delivering their produce whilst the roads are in their best state.

The disadvantages are, that without a great attention carefully to stack and secure the straw from weather, it is often in a great measure wasted, though there are a few
who

who are attentive to the securing of it. The straw is also consumed in the fields, which is a much less economical mode than in the fold-yard, or in a beast-house; the straw is also liable not to be thrashed so clean as when done more leisurely in the barn, and there is a greater waste of corn than when thrashed in the usual mode; yet it is thought on the whole, there is a saving in quantity, of near 5 per cent.

All the straw is consumed in one place in the field, near to the stack, under the shelter of trees, or some high hedge; and after it is finished, the manure is thrown up together into a heap; so that the carriage of the straw from the field home, and of the manure back again, is saved.

Produce.—In Ryedale, eight quarters per acre are commonly produced, often ten, and that for several years in succession, and still larger crops are spoken of; but in most other parts of the Riding, six quarters per acre are esteemed a good crop.

Much of the oats intended for bread, are purchased by weight, and a sort of standard fixed, which seems to point out the necessary quality for the purpose, much below which they will not answer for the purpose of making oatmeal. These oats are expected to weigh twenty-four stone to the quarter, and many grown in Ryedale and that neighbourhood, weigh considerably more: twenty-four stone in some markets are called a quarter, and if they do not weigh that, so much more in measure must be delivered as will make up that weight.

In the southern part of the vale of York, in Ryedale, and the Howardian hills (except the west end of them), harvest usually commences about the 10th of August.—In the northern part of the vale, and the west end of the
How-

Howardian hills, in Cleveland, and the Marishes, the latter end of the month. On the coast, and in both the Moorlands, where the situation is favourable, the beginning of September; but in general, the latter end of that month.

BEANS AND BLENDINGS.

WHEN the land inclines to sand or gravel, a mixture of beans and peas, or beans and lintels (a large species of vetch, which MARSHALL says, is the *crum lens*) is sown, on the same principle that meslin is cultivated on land of a similar quality; but where the land is strong, beans without any mixture are sown; neither beans or blendings are a common crop in the district under survey, except in the vale of York, and not even there is it generally to be met with.

Preparation.—Beans usually succeed wheat on a fallow, and are sown on one earth, as they are fond of a strong unbroken furrow; near Bedale they are sometimes sown after turnips; the practice of sowing them with a drill is gaining ground, and some have been dibbled by hand; both which methods have been found to answer better than sowing broadcast*, as the seed being more completely covered, a saving is made in the quantity sown, and the crop admits the application of the hoe with much greater convenience and effect; the saving of seed has been the original motive for adopting these practices, as hoeing these crops is not yet general, though it is prevalent in a small

* The best method of sowing beans, is by the drill. Proof—Two farmers in the parish of Forcett, sowed each one field with beans; the one upon land of superior quality, by broadcast—he had a bad crop; the other upon land of inferior quality, by drill—he had a good crop: he hoed them.—J. Smedd's.

district

district in the neighbourhood of Alne and Toller-ton, where the farmers find an advantage in it*. Here beans rarely precede wheat, nor is dung usually given to them; the reverse is the practice where their cultivation is well understood; but it has not yet been found out here, that on strong lands, beans may as truly be said to be the mother of wheat, as clover on those which are light: here dunged fallows for wheat are sufficiently common; but the dung ought to be given to the beans, and wheat to fallow.

Sort.—No other bean is sown in this Riding, than the common small horse-bean.

Quantity of Seed.—From three to four bushels to the acre, are sown broadcast; in dibbling or drilling, less suffices.

Time of Sowing.—The time of sowing beans or blendings, is the latter end of February or beginning of March, as the season suits.

Culture.—Beans ought to be hoed universally, but rarely are, except by a few who have used the drill: as somewhat of a substitute for hoeing, sheep are frequently turned into the bean-fields in spring, with a view of eating the grass and weeds, which is found to have a good effect; they have such an aversion to the beans, that they will not touch them, unless compelled by extreme hunger.

Harvest.—The time of harvest is at the close of white-corn harvest; generally in October.

Beans and blendings are mostly cut with the scythe, and made into sheaves; for beans, straw of wheat or oats

* In the marsh-lands below Howden, they have an excellent mode of cultivating beans. Previous to sowing, the land is set out in one bout ridges, causing them to roll into the furrow; they are covered by harrowing the land over; weeds are destroyed whilst the beans are small, by harrowing which, also serves for an earthing of the beans, and the intermediate spaces are afterwards ploughed as there is occasion. This is making beans a perfect fallow crop.—J. T.

are used for bands; blendings are tied with the peas or vetches which grew among them.

Produce.—The average produce of beans it is difficult to ascertain, owing to the very different states and circumstances of the land on which they are sown, and general uncertainty of the crop; when they are cultivated as a preparative for wheat, the produce is from four to five quarters or upwards per acre; when they precede a fallow, and constitute what is called a *stolen crop*, it will seldom exceed from two to three quarters per acre.

PEAS.

Preparation.—Where the soil is light or gravelly, grey peas take the place of beans, and those of a forward kind are generally preferred; they are usually sown broadcast on one earth.

Sort.—White peas are rarely sown, but of grey peas there are two or three varieties, little different from each other.

Time of Sowing and Quantity of Seed.—The same as beans.

Culture.—Hand-weeded only, when very necessary.

Harvest.—If they are of an early kind, the harvest is in the latter end of August, or beginning of September; but if of the late sorts, about the same time as of beans.

Produce.—From three to five quarters per acre.

RAPE.

RAPE (for seed) is extensively cultivated in the district under survey, upon land pared and burnt, but not otherwise. It is sown in August, and reaped generally in June.

In

In most parts of the Riding, it is the custom to thrash it in the field, as soon as dry, by a number of men in proportion to the quantity, so as to finish the whole in one day; though this practice is now rather giving way to the much better, and more economical mode of stacking it in the field, and thrashing it out with a few men at a convenient time; it is sometimes also, as soon as dry, put into a barn, and there thrashed*.

This crop being more extensively cultivated in Ryedale than in any other part of the Riding, and MARSHALL, in his *Rural Economy of Yorkshire*, having fully detailed the particulars of the cultivation of it in that district, with which he is so well acquainted, I shall take the liberty of transcribing what he has said upon the subject, as a more satisfactory account could not be given.

“ Rape is generally sown on sward. In the richer parts of the vale, it is sometimes sown upon fallow, like turnips, and sometimes it is ventured upon the stubble of an arable crop; but unless the soil be clean and rich, seldom with success. On *maiden sward*, as that of commons, or old grazing grounds, it in general turns out a very profitable crop.

* I have grown upon my estates, and upon the different farms which I hire, more rape seed than almost any man in the county, and find that the best way to secure it from damage in the field, is to tie it up, as it is cut, in single sheaves; if it be cut a little before it is quite ripe, you may bind it with its own straw: this requires it to remain a little longer in the field before thrashing, but secures it from being damaged by hail, or blown about by a high wind. I have lately lett my rape to thrash at 25s. or 30s. per acre, according to the weight of the crop, the contractor finding every thing as to meat, drink, &c. Rape, when tied up in this manner, is gathered much cleaner, and with much less waste, in shaking out by the gatherers on the thrashing day; the difference of the expence does not exceed 1s. 8d. per acre. I am of opinion, that it is safer, and much less expence, to thrash the seed by contract in the field, than to stack it, and thrash it afterwards in a barn. The rape straw, which is too frequently burnt, makes excellent bedding for the fold-yard, or for stack-bottoms.—*E. Cleaver, Esq.*

" Various as are the soils of this district, it is sown on every species, and generally with a success proportioned to its richness, the specific quality of the soil being considered as immaterial, provided it has lain long in sward, and provided the sward be reduced, and the soil ameliorated by *paring and burning*.

" The ashes of the sward, with generally a sprinkling of lime, are the universal and only manure for rape on sward. The ashes, I believe, are principally depended upon for the rape, the lime being rather intended for succeeding crops.

" The time of sowing, July : early enough to get a strong leaf, and late enough to prevent its running up to stem the first autumn. Quantity of seed one gallon an acre, sown generally on the rough plit of one ploughing; the seed being brushed with a thorn harrow.

" Sometimes the tops of the plits are scratched with a pair of tined harrows before the seed be sown; and sometimes they are neither harrowed before, nor swept after the sowing.

" I have heard of an instance or two, of rape being hoed with five or six inch hoes, but that is not the practice of the country. Neither hoeing nor weeding of any kind is, I believe, scarcely ever bestowed on the rape crop.

" One practice, however, in this stage of the general process of rape deserves notice. The practice here meant, is that of *transplanting*, namely, filling the vacant patches (with which rape too frequently abounds), with plants drawn from the parts which are over-stocked.

" This work is generally done by women, who put in the plants with dibbles.

" Plants thus removed seldom fail to take root; but they ripen somewhat later than the unmoved plants. Nevertheless, the practice is highly eligible.

" The

“ The time of transplanting, October.

“ If the whole, or a principal part of a land, or a large patch, happen to miss, the plough is sometimes used in transplanting.

“ In this case, the plants are laid or placed in a leaning posture by women, in every second furrow, about a foot apart in the furrows. The roots are of course covered with the next plit; and a second plit being added, another row of plants are laid against it. The distance, therefore, is about eighteen or twenty inches by twelve, which upon good land is found to be sufficiently near.

“ The expence of transplanting rape in this manner, has been found, on accurate observation, to be about four shillings an acre, namely, eight women at sixpence a day each.

“ This expedient leads to an operation which would, in my opinion, be a valuable *improvement in the culture of rape*.

“ The great objection to this crop, and that which deters many judicious men from cultivating it, is the length of time it occupies the soil. Being sown in July or August, the whole tribe of biennial weeds have time to establish themselves before winter; and not being reaped until July or August following, they have time to mature and shed their seed.

“ The grasses and strong-rooted weeds of every kind, likewise gain in that time a degree of possession which is difficult to be set aside. The soil, too, gets out of tilth, by lying so long a time without ploughing.

“ One ploughing in autumn would remove, or greatly alleviate those evils. The biennials would thereby be extirpated; the grasses and strong rooted weeds be checked, and the soil be preserved in tillage.

“ The operation which strikes me as being singularly eligible to be adopted, is that of *transplanting the whole crop*.

“ The method I should propose, is this—draw from the first land a sufficiency of plants to plant the last land with, and bury their roots in a vacant ground until wanted.

“ Plough the first land, burying the weeds and the refuse rape, and stock it at the same time with plants drawn from the second land, in the manner above described.

“ The first land finished, supply the second with plants from the third, and so on till the whole be finished, planting the last land with the plants in reserve.

“ Besides the *advantages* already set forth, the entire piece would by this means be furnished with prime plants, equal in strength and regular in distance. Hence the soil would not only be evenly occupied, but the crop would ripen equally. The large and uniform distance of the plants, too, would give free admission to the hoe: even a narrow horse-hoe might be used between the rows.

“ Thus, the foulest crop which farmers have to deal with, might for a small expence be rendered a fallow crop of the first estimation.

“ If sod-burnt land were managed in this manner, the first, or seed-ploughing, ought to be very shallow across the ridges (if any); and the second, or transplanting-ploughing, long-way of the lands across the first ploughing, gathering up the ridges dry against winter.

“ A manured fallow, a rich wheat stubble, or other land sufficiently clean, and in sufficient heart for rape, might be planted with it in a similar manner, raising plants for this purpose in a detached seed-bed.

“ Rape is generally ripe in July, sooner or latter, according to the season. It is considered as fit for cutting when the forwardest of the seed has begun to turn black.

“ It

"It is usually cut with sickles by women, who, in the ordinary management of the country, lay it in broad thin 'reaps,' upon the tops of the stubble; which they generally cut about a foot high, or as high as the lower branches will allow.

"In these 'reaps,' shoves, or open sheaves, it lies until the sap be pretty well dried out of the greenest, and the ripest is ready to open its pods. If it lie too long, much of the prime seed will be lost in the field; if it be thrashed too green, much will be left in the pods, and that which is thrashed out, be difficult to cure.

"The method of thrashing (which has been practised in the vale, perhaps ever since rape has been cultivated in it), will require more description than I can well persuade myself to bestow upon it. But a public 'rape-thrashing' conducted as it is in this country, is one of the most striking scenes which occur in the field of rural economy.

"Armies under engagement can scarcely exhibit, to general appearance, a greater tumult; nor on the parade can they boast of better discipline, than may sometimes be observed in a well-conducted rape-thrashing.

"If the quantity to be thrashed be large, as twenty or thirty acres, the whole country for many miles round are collected. The days of thrashing are considered as public days; the lord of the harvest keeping open field for all who chuse to come into it; ample provision of meat and drink being made for this purpose. A wake, or a fair, is not a scene of greater jollity.

"It is not common, however, for unbidden guests to go to these rural meetings, without assisting, or at least offering their services to assist, in forwarding the business of the day. But to make sure of hands for the more laborious departments, men and women are previously retained with wages, over and above the spoils of the feast.

“Also, previous to the day of thrashing, a ‘rape-cloth,’ ‘carrying-cloths,’ and other necessities, are to be provided. The cloths are in the hands of a few men, who let them out at so much a day, or so much an acre. A rape-cloth of the largest size measures twenty yards square, weighing more than half a ton weight. Hessen is the usual material of which it is made. The hire of such a cloth, 15s. a day.

“Also, before the thrashing, the rape and the stubble are to be removed off the place (or places, if the piece be large) where the thrashing-floor is to be made, the clods being taken off, and the hollows filled up, where the cloth is intended to be laid.

“The business of the day is thus conducted: the men are divided into carriers, thrashers, and floor-men.—Women fill the carrying-cloths, and boys hold them while filling. These cloths are made of canvass about six feet square, with poles fixed on two opposite sides (in the manner of a rolling map); openings being left in the middle, between the poles and the canvass, for two men to run their arms through, one on either side, the poles resting by their middles on the men’s shoulders; the cloth filled with rape, hanging between them. In these cloths, the whole of the crop is carried to the thrashing-floor.

“The floor-men are divided into layers-on, turners, takers-off, rakemen, riddlers, &c. &c. &c.

“The rape to be thrashed, is spread thin upon the cloth, in a circle as large as the cloth will contain.

“The thrashers move continually in this ring, marching with a slow step in pairs, and in two divisions; the individuals of each division following one another as closely as the nature of their employment will allow them.

“The first division are preceded by the layers-on, and followed by the turners, and close upon the rear of the second

cond division follow the takers-off, who, with wooden tined-forks, shake and throw off the straw, which is piled in heaps by others with longer implements.

“ Finally, the rake-men run off the seed with the heads of their rakes thrust before them, forcing the seed into recesses formed within the ring, or upon the corners of the cloth, where groups of fillers, riddlers, &c. &c. are employed in separating the seed from the principal part of the pods and short straws which beat off in thrashing; while others are equally busy in putting the unwinnowed seed into bags, and carrying it to the “pie,” or waggon.

“ Toward the close of the day, when the straw has risen to mountainous heaps of almost snowy whiteness; when the field of employment appears on its largest scale; when every department is in full work, and when every individual is animated, and not yet satiated with the entertainment of the day, the rape-thrashing affords the contemplative mind a pleasing sight, and would afford the pencil a most picturesque subject.

“ The two divisions of thrashers, moving in close phalanx with flails nimbly brandishing, sometimes in open view, sometimes partially hid among the piles of straw; the cloth-men busy and attentive to their various employments; the team drawing off the loaded seed; the carriers from every hand pressing to the thrashing-floor with their seemingly cumbrous loads; and the distant groups of fillers scattered on every side of the foreground, could not fail of affording matter interesting to the painter, especially in a country where suitable off-scape is seldom wanting.

“ It were almost pity, that a scene at once so picturesque and so truly rustic, should be suffered to sink into oblivion, as in all probability it will do in a short course of years. A more economical management is growing into

into esteem, and it is highly probable, that in a few years public rape-thrashing will be discontinued, and of course in a few years more, will be forgotten.

“The seed is cured (that is, takes the heat which is incident to all recent vegetables) in the chaff or pods, provincially “pulls,” either on a barn-floor, a granary, &c. or in “pies,” built in the field for this purpose with plaited straw*.

“The form, that of a corn-bushel; the diameter seven or eight feet; the height, three or four; filled with rough seed to the brim, and topped up in a conical form with straw or other materials; and the whole secured with a coat of thatch.

“This is more generally done when the markets happen to be low at the time of thrashing; as in these pies, the seed may be kept any length of time, provided a sufficient proportion of pulls be retained among it, and provided the size of these receptacles, and consequently the quantity of seed deposited in them, be not too large.

“When the seed has done heating, and a market offers, it is sold, carried to the barn, winnowed, and sent to market.

“The *inconveniences* of public rape-thrashing now require to be mentioned. The bustle and hurry, so dissimilar to the placid routine of husbandry, which are unavoidable on these occasions, are disagreeable to most men; the expence, too, is sometimes unreasonable; the hazard, by weather, considerable; and the waste which is generally made by the over-assiduousness of unskilful volunteers, are all of them objections to the practice.

* Great attention and labour are required to preserve the seed from heating and moulding, when collected in great quantities in a short space of time; which can scarcely be accomplished, but by spreading it thin on a floor, and repeatedly turning it; but this risque is entirely done away by stacking or housing it; the seed being perfectly cured by remaining a few months in the stack or mow.—*J. T.*

“Be-

“ Besides, the straw and the pulls are in this case little less than wasted, being usually burnt in the field for their ashes, which are very few in quantity, and the neat profit arising from them inconsiderable*.

“ The season too, is inconvenient: whether in hay time or harvest, every other employment, however necessary, bows to the rape-thrashing.

“ It were no wonder that inconveniencies such as these should induce sensible men to devise a more eligible management of this profitable crop. Yet such is the infatuation of an established custom, that there has not, I believe, been an instance of more than one deviation originating in the vale, during the centuries of time which rape may have been cultivated in it.

“ In this instance, the rape was *harvested as wheat*; reaped, bound, shocked, carried into the barn, cured in the straw, and thrashed out when markets and convenience required.

“ The binding, while yet in a flexible state, secured it from that waste by shedding, which is more or less incurred in handling loose reaps in a dry parched state, with the pods ready to open with the slightest touch.

“ By setting it up in stooks, the waste committed by birds was much lessened, especially that by wood-pigeons, which settling upon the reaps, beat out tenfold what they eat; whereas in shocks, that which is beaten out runs down into the sheaves, and is saved.

“ In carrying, a tall pole was fixed at each corner of the waggon, and a large cloth thrown over them, hanging

* It is a common practice to sell the straw for some such trifling sum as half a guinea an acre, or less, to people who burn it for the salt which it contains; while this straw, were it properly taken care of, and consumed in the fold-yard, would be of much the same value as an equal quantity of any other straw: cattle have been known to advance in flesh more on this straw, than they probably would have done on any other.—J. T.

in a bag, to receive the load, and to catch the shedded seed.

“ To prevent waste in the barn, the floor of the mow was covered with *soft hay*, which stops the running of the seed, and off which it may be easily gathered, or thrown into the thrashing-floor; whereas straw being more open, admits the seed to run down among it, and is the cause of considerable waste.

“ The expence under this management, is comparatively much less than it is in a public thrashing, more especially if the piece to be harvested be small, as four or five acres for instance, which create as great a bustle, and cause almost as great an expence, as twice that quantity.

“ By an accurate account of the expence of five acres of rape, harvested in the usual manner some years ago, the expence appears to be 23s. an acre. The same quantity would now, under the present price of living, and the present stile of treating upon these occasions, cost from 30s. to 40s. an acre.

“ By an account equally accurate and particular, it appears that four acres and three quarters, harvested as wheat, a very few years ago, cost only 16s. 6d. an acre, though thrashed out in harvest.

	s.	d.
“ Reaping, three women at 8d. each, -	2	0
“ Binding, a man 2s. a boy 6d. -	2	6
“ Carrying, three loads at 1s. 6d. -	4	6
“ Thrashing, three days in harvest -	2	6
	16	6

“ But the saving of expence is far from being the greatest saving by this practice. The value of the straw to cattle in winter, is found to be very considerable. The stover (that is, the pulls and points of the straw broken off in

in thrashing), is as acceptable to them as hay; and the tops of the straw are eaten with avidity, nearly equal to oat straw, better than wheat straw. If it be well got, the smaller butts will be eaten up clean. The offal makes excellent litter for the farm-yard, and is useful for bottoms of mows, stacks, &c. &c.*

“Setting fire to the whole produce of the field, is a barbarism which ought to be exploded.

“Objectionable, however, as the common mode of harvesting rape in this country undoubtedly is, it has, during time immemorial, been implicitly adhered to (the instance last mentioned only excepted), until this year (1787), when an improvement has taken place, which bids fair to effect a revolution in this department of the husbandry of the vale.

“In this improved method, the rape is all bound in sheaflets, about half the size of wheat-sheaves, with green underling plants of rape, or with long grass, or other weeds, with which the stubble of rape too generally abounds.

“These sheaflets are laid lightly upon the tops of the stubble to dry; not set up in stooks, as in the instance above noticed. When they are half dry, they are, or ought to be, turned; and when fully dry, are stacked in the field.

“The sheaves are carried to the stack in sledges, each sledge being furnished with a cloth, or large bag, supported by a tall frame, rising about four feet above the body of the sledge, which is light, and drawn by one horse. These sledges are loaded, that is to say, the bags are filled by women, and are taken to the stacks by boys,

* “If we consider the nature of rape, how nearly it is allied to the turnip, and how grateful to cattle while in a green state, it is no wonder that the pod, and finer parts of the stems, should be acceptable to them in a state of dryness.”—*Marshall's Rural Econ. of Yorksb.*

riding upon the horses. A large cloth is spread by the side of the stack, for emptying the sledges upon, which is done by overturning them; so that no time is lost either by the sledges or the forkers. A large piece of rape is soon got together in this way.

“ When it is thus secured in stack, and has taken its heat in the straw, it remains at the option of the owner to thrash it when, where, and in what manner he pleases; that is, as markets, leisure, and other circumstances may direct him. It is observable, that rape-seed cured in stack, generally turns out a fine sample.

“ One thing relative to this practice is too remarkable to pass unnoticed: it has been the established, and I understand, the ordinary practice, during many years, of a district (the Egton quarter of the Moorlands), situated not more than ten miles from that part of the margin of the vale (Lockton) at which it this year made its entry.

“ This is a striking instance of the slow progress which practices in husbandry, however excellent, make, in travelling from one district to another. How essentially necessary then it is, to register them in the districts of their birth, or in places where they have reached the highest degree of perfection, and to distribute such registers reciprocally among the various districts of the island.

“ There are no oil-mills in the vale. The only market is Malton, from whence rape-seed is sent chiefly, I believe, into the manufacturing part of the county, where oil-mills abound*.

“ The price, ten to thirty pounds a last, of ten quarters. The produce of a middling crop, four quarters an acre: five quarters an acre have, not unfrequently, been produced.

* An oil-mill has been lately erected at Kirkby Moorside.—J. T.

“ The

"The fluctuation of price which rape-seed is subject to, being in some measure, perhaps, influenced by the success of the Greenland fishery, and the hazard to which the crop is exposed, render it in a degree uncertain.

"Frosts in spring, when rape is in blow, or in the critical state between the blossoming and the formation of the pods, are its greatest enemies. In the spring of 1783 much mischief was done by frosts in May. One person had a piece of twenty acres almost destroyed by it. In the beginning of May, this crop promised eight or ten pounds an acre; the soil rich, the crop on the ground good, and the price above par. In the wane of May, the twenty acres were offered for twenty pounds! a loss of one hundred and fifty to two hundred pounds in one article, and perhaps in one night.

"But every crop is subject to hazard, and to a fluctuation in price; and although rape be liable to be cut off by frost, it rarely is destroyed by that means. Upon the whole, it may be considered as one of the most profitable crops in husbandry. There have been instances, on cold unproductive old pasture lands, in which the produce of the rape crop has been equal to the purchase-value of the land.

"This productiveness, or in other words, the profitability of the rape crop, is, however, held out by some men as an objection to its culture, under an idea that it must impoverish the soil.

"Does not every productive crop impoverish the soil? Yet who will argue that good crops are less eligible than bad ones? A good crop enables the farmer to replenish and meliorate his soil with manure and tillage, which ought (generally speaking) always to be in proportion to the recent productiveness of the soil, and to the state of foulness
and

and tith, in which the nature of the recent crops have placed it.

"If in the culture of rape, the soil be permitted to lie undisturbed either by the plough or the hoe, from seed-time to harvest, suffering weeds of every species to mature and scatter their seeds, and to gain an establishment in the soil; and if at harvest the straw be burnt in the field, and the ashes be sent to market, rape is in truth an impoverishing crop.

"But were the soil to be ploughed in autumn, and to be hoed during the ensuing summer; and were the straw, &c. instead of being burnt, to be consumed in the farm-yard, as fodder and litter, I am of opinion that rape in many cases would be the most eligible crop the farmer could make choice of. *

TURNIPS.

THE cultivation of turnips is generally established throughout this district; but the management of them is not equal in all parts of it.

Preparation.—It appears by the rotation of crops, that they generally succeed corn; when that is the case, the land is ploughed in autumn, and made clean and fine by repeated ploughings and harrowings in spring; it is then manured at the rate of from six to ten cart-loads of dung (each containing about thirty bushels), and sometimes of

* "Whether oleaginous, or farinaceous crops—whether five quarters of rape, or five quarters of wheat, an acre—incur the greater impoverishment of the soil, is a subject which is yet in the hands of theory. While the food of vegetables, and the vegetable economy at large, are so little understood as they appear to be at present, all argument respecting the comparative impoverishment of the soil by different species of vegetables, must be futile."—*Marshall's Rural Econ. of Yorksb.*

from

from one and a half to three chaldrons* of lime per acre, and then ploughed and sown.

When turnips succeed clover or grass-seeds, it is common to pasture the land with sheep, so late in spring as only to leave sufficient time for giving the land two or three ploughings, with necessary harrowings, immediately before seed-time; and in this course very little or no manure is applied, except sometimes two or three chaldrons of lime per acre.

I met with two farmers, one in Ryedale†, the other near Scarborough‡, who have sown turnips upon old pasture-land, upon one earth: the latter has practised it for four or five years, and both have found it to answer. I saw both their crops in the year 1793, which were sown in that manner, and they were extraordinary good. The soil on which those grew in Ryedale, was rather a clayey loam; not what is generally thought to be a kindly turnip soil. Those near Scarborough were upon a good turnip soil, but the land had been in grass time immemorial. The mode of management is, to plough the land in winter pretty deep; in spring, grass will unavoidably grow on the edges of the flag or sod; this is kept eaten down with sheep: when the season for sowing draws near, the land is manured with short manure, and extremely well harrowed, in which state it lies until a suitable season offers for sowing.

When land is pared and burnt, if not sown with rape for seed, it is always sown with turnips on one earth; and certain, and generally good, crops are obtained by this mode.

* A chaldron of lime is 32 bushels.

† JOHN DOWKER, of Salton.

‡ JOHN MUSHAM, of Seamer.

Sort.—The stone turnip is generally sown in Ryedale. This is much superior to the other kinds known here* ; it bulbs quicker, the grain is finer, the skin thinner, and the crown of the bulb smoother ; and consequently it is less liable to be injured by wet or frost, than the other kinds. This does not grow to quite so large a size as some others ; but that want is easily made up by leaving them a little thicker upon the ground in hoeing : the Norfolk white turnip is the prevailing sort in the other parts of the Riding.

Mode of Sowing.—In the northern part of the vale of York, turnips are frequently sown with the Scotch drill†, in ridges, which are ploughed down, earthed up again, and hand-hoed, similar to potatoes : upon a wet or stiffish soil, it is an excellent mode, as by those means, soils ill adapted to the growth of that valuable root, may be made to grow it, with success, when otherwise they could not be obtained || ; but it is often practised upon a proper turnip soil, where its advantages do not appear to counterbalance the following disadvantages : the rows must necessarily be so wide as to admit the plough to go between them, and consequently, they are at a greater distance than is necessary for the turnips to obtain a competent

* The stone turnip is the sweetest, and stands the winter best ; and the specific gravity is greater than of any other sort.—*E. Cleaver, Esq.*

† This is a hand-drill, originally made in Scotland, and is calculated to sow the seed upon ridges.—*J. T.*

|| Upon a wet stiffish soil, the drill husbandry is very good, for it both meliorates and drains it ; but upon a proper turnip soil, it is expensive and useless.

In my opinion, turnip-seed ought to be lightly covered, for the greatest turnips, and the largest onions, are those which apparently sit easy upon the ground.

It is necessary for every farmer to divide his turnip land into two portions. The first to be sown in the first week in June ; the second about a month after. A neighbour of mine sowed his turnips under a light furrow ; he had a crop.—In a very dry season, under-furrow is good management.—*J. Smeddle.*

size ;

size*; they will not therefore become so heavy a crop as when sowed upon level ground. The turnips will also be much more exposed to frost, and consequently not stand the winter as well, as if less elevated from the ground; and what is of still more consequence, so great is the danger of the sheep getting laid on their backs in the furrows during the time of eating them, that it is absolutely necessary for the fold to be constantly attended.

Several farmers in the vale, and also a few in Ryedale, have got a drill for sowing turnips, made by T. PROUD, of Darlington, which fixes to the plough-beam, consequently sowing and ploughing is performed by the same operation†. This drill has some advantages beyond any I have seen: the seed is deposited in the fresh mould, and upon the manure, whilst there is moisture in the soil (the land being manured immediately before ploughing), and if the soil is sandy, there is no need of harrowing: these circumstances have a great tendency towards ensuring a crop.

COOKE's drill, and also one made by one PERKINS, of Stockton, is used for sowing turnips, particularly in the northern part of the vale; but much the greatest proportion of turnips in the whole Riding is sown broadcast.

Quantity of Seed.—One pound per acre.

Time of Sowing.—From after the first week in June, to the first week in July; but they who cultivate a con-

* I have always found, that turnips of the largest size are more woody, and not so good in quality, as those of a middle size.—*J. T.*

† I have seen turnips often sown nearly in this way, only in place of a drill-machine fixed to the plough-beam, the common Scotch barrow was used; thus a man with a double-boarded plough, drawn by one or two horses, earths up the drills. The drill-barrow is fixed to his plough by a cord drawn along by the same force: it requires a man or a boy to direct it. In this way the ploughing and sowing is done at once, and I have always found it of great advantage to have it so, as sowing on the fresh-turned land is a great matter. I have often seen, and had myself, as good turnips as could be expected on land.—*Anonymus.*

siderable quantity, wish to vary the time of sowing, as they thereby come successively by rotation, ready for the hoe, and into use.

Culture while growing.—Broadcast turnips are generally hoed once, and sometimes twice, but the hoeing in this country is not yet well performed, nor are the people expert at it: the general price for the first hoeing is 6s. per acre; for the second, two, or three shillings. During their growth, it is not uncommon to turn some lambs amongst them, to pick up the weeds, which they prefer to the turnips; and this they will do for a considerable time, without injuring the crop; but if the turnips have got large tops, the lambs, by running among them, will break and injure them considerably, and impede their growth.

Consumption.—The general practice is to consume them on the land where they grow, by folding the stock upon them with hurdles, or nets, on a small part at once, always adding a piece more turnips in addition to their last, as they are in want: nevertheless, considerable quantities are drawn, for the purpose of giving to milch cows, or feeding beasts, either in the fold-yards, houses, or in a grass field; but drawing them to be consumed on a field of seeds, or of grass, by sheep or cattle, as a more economical mode than consuming them on the land where they grew, is rarely practised: indeed the general opinion is against it, from the idea that it is robbing the land which produced them*.

POTA-

* It is a fact which every one will admit, that turnips drawn and spread in a grass-field, will go much farther than when consumed on the land where they grew: from my own observation, there is near one-third difference. Where turnips are much cultivated, it is now become the general practice to sow grass-seeds with the succeeding crop of corn which follows them, if the land is of pretty good quality, and has been well manured for the turnips; if a good crop of these has been obtained, the consumption of them on the land will make it so rich, that the succeeding crop of corn will be greatly injured by running

POTATOES.

POTATOES first became an object of field husbandry in this district, not more than forty years since; before which time they were little known beyond the garden of the gentleman; within that period, they have got universal possession, from the table of the rich, to the daily board of every cottage; with all the lower orders, they constitute the most essential article of their sustenance; and at this time there is not, probably, one article, the produce of the country, that could not with less inconvenience be spared than the potatoe, so universal is its use, so cheap and nutritious the food that it affords.

Preparation.—Potatoes are generally cultivated in this district as a fallow crop; of course the land is winter-ploughed, and made clean from quicks and weeds, as early in the spring as the season will admit.

Sort.—Potatoes mostly of the kidney kind, also a round flattish sort, are much grown; these are the kinds cultivated for the table—the ox-noble, champions, and a red sort (I believe the Surinam), are cultivated by a few farmers, for cattle and pigs.

too much into straw, and being laid; and the clover or seeds sown with it, to be thereby very much injured; but if the turnips were drawn, and regularly consumed in the field, which was sown with seeds either in the last year, or the year before, that inconvenience would be removed; the additional quantity of stock they would keep, would amply compensate for the expence of drawing and carriage; the land would be more benefited by a larger number of stock being kept, and they would make a greater improvement by being regularly served every day, having their food clean, and lying clean themselves, than when pent on a piece of turnips, which after the first few days become soiled, not only by their feet, but also by their dung and urine, in which state nothing but hunger will induce them to eat such uncleanly food; and from their eagerness for that which is fresh, arises the difficulty of preventing sheep from breaking out of their fold into the fresh turnips, where they do great damage.—J. T.

In the dales of the Moorlands, they make use of sets of their own growth, only endeavouring to plant them on a soil as different from that on which they grew, as they can: by this means, they in a great measure avoid the curl; but in the lower parts of the Riding, the sets of the kinds for the table are procured either from the Moorlands or from Scotland, and it is found necessary to renew them every year, or at least every other*; for it is well known that the produce from them rarely fails to be clear of curled tops the first and second year of planting, but that in the third they will be very generally curled. No other prevention is known here for this disease, or degeneracy, than renewing the sets, and changing the seed and soil; nor did the surveyor ever meet with any one able to assign the cause†.

When the top of the potatoe becomes curled, it loses its fertility, rarely producing above one or two small potatoes; but the ox-noble, champions, and red kinds, are not liable to this disease. The potatoe was undoubtedly introduced into Europe from America, soon after the discovery of that continent, but at what particular time, from what part of it, or by whom, history has not left us the record; nor can the generally received opinion, of their

* I got my potatoes to plant three years ago from the Eastern Moorlands; they were planted in my light sandy soil at Brakenbrough. I have had three crops from the same seed in that land, without any renewal, all of which have been pretty clear from the curl; but this year's crop was by far the clearest of that disorder.—*M. G. Steele, Esq.*

† A person in the vicinity of the Western Moorlands practised the following method of cultivating potatoes, and thereby avoided the evil of curled tops, which he had before experienced. Having observed in a piece of ground where potatoes had been set, a number of young plants of potatoes, he drew them, and transplanted them the following spring; from these he obtained a variety of small potatoes, which he used as sets, and continued to transplant from these for four years, when he had the pleasure of reaping a full crop, without one instance of a curled top.—*W. Dinsdale.*

It is generally thought, that the curled topped potatoe proceeds from a neglect of raising fresh sorts from the apple or seed.—*E. Cleaver, Esq.*

intro-

introduction by Sir WALTER RALEIGH, be by any means proved. They are at this time as generally cultivated throughout the northern continent of America as in England, but no curled top, and no degeneracy of any kind, is there known; that disease has not been long observed in England, perhaps not much more than twenty years, but it is now general; frequently whole crops are destroyed by it; and it threatens, should it increase, to stop the cultivation of this most valuable root. The circumstance of this disease being unknown in America, points out the probability of its originating in a natural degeneracy, the consequence of long cultivation in a climate uncongenial to the plant, and the want of attention in not recurring to the native country for a change of seeds; and this conjecture is much strengthened by the certain fact, that where potatoes for planting have been procured of late years from America, no alteration is yet known to have taken place in them, though cultivated for ten or fifteen years; they continuing during that time to be as productive as when first introduced, and not suffering any perceptible change.

Setting.—The potatoes are cut into sets, each containing at least two eyes or buds, and some farmers have them cut with more. These are placed at the distance of about ten inches in the furrows (the land being previously set out in one-bout ridges with the plough), which requires from fifteen to twenty bushels per acre*, the manure (at the rate of from ten to twenty cart-loads per acre), being either set

* I have known some people deposit their potatoe sets in horse-dung, in which they continued until they had sprouted to a moderate length; afterwards taking them out carefully, and planting them with a round stick, or dibble, one by one, scarcely suffering the top of the young shoot to appear. If the ground in which they are planted be somewhat sheltered from the cold, potatoes by this method may be raised very early. The horse-dung must be moderately warm.—*J. Smeddle.*

in heaps in the field, or spread over the ridges ; where the first mode is practised, women or children take it from those heaps in baskets, and lay it in the furrows over the potatoes with their hands ; in the latter mode, the manure, which lies upon the ridges, is pulled into the furrows upon the sets with a moulding-rake or hoes. When the manuring is completed in either way, they are covered with earth by the plough dividing the ridge, and making a fresh one over the potatoes*.

Time of Setting.—The latter end of April, and all May.

Culture.—As soon as the plants begin to make their appearance above ground, the ridges are harrowed down, and are suffered to remain in that state about a week, when the weeds will again begin to appear ; the ridges are then earthed up, and in a week or two as much of the earth from the sides of them is ploughed down, as can be done without leaving the roots too bare ; after this, the tops of the ridges are carefully hand-hoed, and the earth which was ploughed from the ridges is again ploughed to them ; if afterwards weeds should grow, they are again hand-hoed or weeded, after which, the earth is drawn up to the top of the ridges. The tops of the potatoes having by this time got to a considerable size, soon overcome all weeds, and consequently require no further attention till the time of taking up.

Taking up.—This is done by passing a plough under the ridge, and thereby laying bare the potatoes† ; or instead of the plough, a spade, or a three-pronged fork, is

* Though the practice of covering them with the plough is very common, yet it is not always done ; the ridges are sometimes hoed down upon the sets by hand, and the ground is left in a rough flat state ; when the potatoes are got above ground, they are earthed up by a plough, and are afterwards managed similar to the other method.—*J. T.*

† This mode of taking up the potatoes by the plough, is extremely slovenly ; and because extremely wasteful, ultimately very expensive ; many by this management are cut and injured ; these damaged potatoes being put into the pie with the others, soon decay, and frequently are productive of great loss, by causing others to decay about them.—*W. S.*

sometimes used to dig up the potatoes; in either case, they are followed by women or children, who gather them, and put them either into a cart, or in heaps.

Preservation.—After all the wounded and small potatoes are picked out, the best are made into “pies;” these are large heaps of potatoes laid upon the surface of the ground (generally in an arable field), and carefully covered from four to six inches thick with straw; a deep trench is dug round, close to the heap, the earth out of which is laid upon the straw, and carefully beaten close and tight, which makes it, in general, impenetrable to frost or wet.

Produce.—From 200 to 300 bushels per acre, of the kinds for the table, are esteemed a good crop; and those kinds cultivated for cattle, will generally produce more by 50 or 100 bushels per acre*.

Effect of Potatoes on the Soil.—It is the opinion of some sensible farmers, that potatoes greatly exhaust the soil, and therefore ought not to be cultivated to a great extent †; while

* Good potatoe ground, in my neighbourhood, lets for the sum of seven guineas an acre: 300 bushels is a fair average for this kind of land, and 1s. per bushel is a low calculation.—*Observation*—When very rich pasture land is taken up, the first, and sometimes the second crop (of corn), except the season be very dry, lodges and rots upon the ground, from the great luxuriance of the soil. In this case, plant the new taken up land with potatoes a year or two (using a common quantity of manure), and the great luxuriance of the soil will be reduced to its proper medium, which in the succeeding year will produce a standing crop. From the above, it appears that potatoes exhaust the soil.—*J. Smeddle.*

I have just been informed by a sensible farmer (Mr. R. GRAHAM), that potatoe ground, after the potatoes are taken up, is improperly managed.—Whether the potatoes are taken up by a “gripe” or plough, the land is left with an unequal surface, high and low, hollows and holes of all dimensions, and in every part of the ground, which being particularly mellow, absorbs every drop of water, and in the hollows or flats, the water stands many days, and deadens and starves the land so effectually, that it cannot be a matter of surprize that the soil is exhausted. To obviate this, the ridges, immediately after the potatoes are taken up, should be made small and round; I mean like the barrel of a road.—*J. Smeddle.*

† This may account for a clause in a lease before recited, restricting the cultivation of potatoes on each farm, to an acre and an half.—*J. T.*

Upon

while others maintain a contrary opinion. My own observation and practice lead me to unite with the latter: I have always found that the crop of corn succeeding the potatoes, and the seeds after the corn, have been equal to those succeeding a crop of turnips*.

It is well known, and generally allowed, that a well-managed crop of potatoes, leaves the soil in a mellow and more fertile state than any summer fallow, or any present mode of cultivation of any other crop. This arises from the frequent stirrings in the fore part of summer

Upon most land, it is observed they do exhaust, and considerably.—*J. H.*

Potatoes ought not to be encouraged to great extent in the hands of the farmer, but the growth should be confined to the cottager.—*E. Cleaver, Esq.*

* What is here said, is not meant to recommend the cultivation of potatoes, to the extinction of turnips; the additional quantity of manure they require, will in most situations restrict the quantity to a few acres, and in such a quantity, where the soil is suitable to them, it is my opinion they may be advantageously cultivated, and ought not to be restricted by the landlord.—*J. T.*

“ Various are the opinions of professional men on this subject. One asserts that they are great impoverishers of the soil; that they are hurtful to the corn, and ruinous to the grass which succeeds them. Another is clearly of opinion, that they are friendly to corn, and not enemies to grass.

“ The dispute may perhaps be settled satisfactorily in this manner.

“ The potatoe contains, indisputably, a great quantity of nourishment; and is therefore, perhaps, as indisputably a great exhauster of the soil.

“ But the quantity of vegetable nourishment carried off in the potatoe crop, is not the only cause of exhaustion: it is notorious to common observation, that this crop leaves the soil in a singularly friable fertile state, causing an abundant produce of the crop which succeeds it.

“ If, taking the advantage of this prodigality of the soil, the husbandman keeps cropping it year after year with corn; and when it will no longer answer his unreasonable expectation, lays it down to grass, it is no wonder that it should be unproductive; for having lavished all its riches on an ungrateful occupier, it is of course reduced to extreme poverty.

“ On the contrary, if after a crop of potatoes well dunged for, only one or two crops of corn be taken, and the land laid down to grass, while yet in a state of fertility, the potatoe crop is, to vulgar appearance at least, friendly to the crops which succeed it.

“ Hence it follows, that land which has been cropped with potatoes, should presently afterwards be laid down to grass, or should be timely replenished with a quantity of manure proportioned to the degree of exhaustion it has undergone.”—*Marshall's Rur. Econ. Yorks.* vol. ii. p. 64 and 65.

with

with the plough and hoes, for the destruction of weeds; the thick shade of the plants, which keeps a perpetual moisture in the soil, and the decay of so large a quantity of leaves and stalks, before and after the crop is taken up, all tend to enrich the soil. A question also arises, on the food and support of this plant: do not all succulent plants derive a greater proportion of their nourishment from the atmosphere by their tops, than those of a drier texture? This, though not capable of proof, is probably the fact; and it is confirmed by the circumstance of all meliorating crops being of a more succulent nature—as beans, peas, vetches, turnips and clover, than wheat, oats, or barley, which are exhausting crops.

RED CLOVER.

Preparation.—Red clover is very little grown in Cleveland, along the coast, or in the country about Northalerton. In Cleveland when sown, it is with the second crop of corn after a fallow, and it is allowed to remain for two years, when it is ploughed out, and the land fallowed for wheat; in that case, some people object to it, and say “it impoverishes the land, and fills it with quicks;” not considering that the evil is to be attributed to their own bad cultivation, and not to the clover. A few, however, get into the excellent rotation of turnips, barley, clover, and wheat, upon lightish soil; which practice is becoming more general: in every other part of the Riding, clover is pretty generally cultivated upon gravelly, loamy, sandy, or limestone soils.

Time of Sowing.—Red clover is either sown immediately after the corn is sown and harrowed in, or soon after it makes its appearance above ground: in the first case,
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Time of Sowing.—Red clover is either sown immediately after the corn is sown and harrowed in, or soon after it makes its appearance above ground: in the first case,
it

it is usually harrowed in, either with the back of the common harrows, or with a very light harrow used for such purposes; in the latter case, the harrow is sometimes used, but a better mode, is brushing it with a bush of small thorns; and sometimes the seed is not covered at all.

Quantity of Seed.—From ten to fourteen pounds of seed, is the quantity usually sown.

Harvesting.—After mowing, the swathes are frequently turned, to prevent the under side turning yellow: this is continued until it is fit to cock, in which state it remains until it is fit to stack: when the crop is large, an improvement of late has been adopted, that is, a small armful is taken up by the top, which is united by a twist; three of these are placed together, leaning against each other, the end of the twisted part being placed inwards, to prevent their opening. This operation is termed “ruckling:” it is an excellent practice, as it exposes the crop more effectually to the air, and less to the rains or dews, than any other mode yet practised. Clover is rarely, and ought never to be, spread abroad, for that occasions great waste, by beating off the leaves, which are very easily separated from the stalk in a hot day.

Application.—The first crop is almost always made into hay, and the second crop generally; but it is thought by some intelligent farmers, that if only the first crop were mown, and the latter eaten with sheep; or, if suffered to remain the second year, then also pastured with sheep, that the land would be kept in much better condition than when two or three crops are mown off it*.

JOHN

* A large field of clover was cut at the usual time; a small part was let to grow, for the purpose of cutting, to feed horses; the rest of the field was stocked with sheep, and eaten: the owner expected great advantage from the foil of the sheep, and that the small part mown again for the horses would be injured—it was quite the contrary; it had the best produce of corn. Will it not then appear,

JOHN DOWKER, in Ryedale, is in the practice of having a few acres of clover to mow for green food for his draught horses, though he does not cultivate clover for any other purpose: it is given to them in the fold-yard, and he finds that five acres of it will keep, during summer, as many horses, as fifteen acres of pasture, of good land*.

Both turnips and red clover are generally found to answer upon all soils, except clay†.

The hay of clover being thought more nutritious than that made of blade grass, it is used mostly for the working horses of the farm; by which means a much less quantity of corn is consumed, than is thought necessary to be given when the horses have hay made from any other grass.

SECT.V.—CROPS NOT COMMONLY CULTIVATED.

RUTA-BAGA, OR SWEDISH TURNIP.

THE ruta-baga has been sown in small quantities by a few individuals, most of whom approve of it, as it is in

pear, that it is not such bad management to mow twice? Will it not be reasonable to suppose, that the excess of heat from the sun over-acted on the soil, which was kept exposed by the sheep grazing the part left to grow, soon got cover to exclude heat and retain moisture? Clays are injured by summer fallow, and may not those soils that grow clover? A few experiments more on this head, might be useful. Clover eaten with sheep, is generally kept short, and much exposed to the sun.—*Anonymous.*

This is a confirmation of the argument I have before advanced, on the subject of fallowing; that land receives more benefit by being covered with a smothering crop, than when the soil is exposed to the sun, as in a summer fallow.—*J. T.*

* This is a practice worthy the attention of all farmers, and other persons who have draught-horses; when green clover is given them in the yard, there is a greater quantity of manure made than when suffered to go out to pasture; they are much sooner filled, and get more rest, and the saving is equal to the above.—*R. G. W.*

† Who ever saw red clover fail upon clay, if sown in a proper season, and well harrowed in?—*John Bailie.*

high

high perfection a full month later than the other kinds; others disapprove of it, as being dry, hard, and thick-skinned, and consequently, as they suppose, affording little nutriment*.

* I have, for the last five years, grown from two to five acres of the ruta-baga, and find it a most excellent root. It should be sown about a week or ten days before other turnips: in every other part of the cultivation, the same treatment is required as in the common turnip, than which I have generally had a heavier crop; this, though to appearance not equal, being of a dry close texture (inclining to that of a carrot), has in reality more substance, and is extremely nutritious; my cows will scarce eat a turnip, after they have fed for a short time on the ruta-baga. The milk produced by it, is of a richer quality than that produced by turnips, and the butter is better tasted, and of a fine colour. Sheep are extremely fond of this root, as are also pigs and horses: I have had them drawn, and kept until Midsummer, in great perfection, for my pigs, for which I think them equal to potatoes. They also possess another great advantage, which is, that they will stand the severest frosts, even if wounded. Roots pulled out of the ground, and in part eaten, have laid for months after in that situation, without suffering in the least. Another material circumstance is in favour of the ruta-baga; it bears transplanting as well as the rape, or cabbages, and where transplanted, produces roots equally good as where sown; a great advantage this over turnips, as all parts of a field where the seed has missed, may thus be made to produce a perfect crop, with little trouble or expence.—*J. T.*

I find by experience, that the ruta-baga is of very little value; it is dry and woody, without any feeding quality.—*E. Cleaver, Esq.*

This is a yellow turnip, and excellent for the table, but too small for field use.—*Cler. Ebor.*

The ruta-baga is not the yellow turnip; it is very different in appearance: the top resembles the rape, or cabbage; the bottom, above ground, is covered with a thick rough green skin, and the inside is of the colour of a yellow turnip, but very different in consistence. I have experienced that this root is capable of mixing either with the turnip, or any of the cole tribe, consequently it is very liable to degenerate.—*J. T.*

An objection has been lately started to the ruta-baga. It is said to be so hard, as greatly to injure the teeth of the sheep that feed upon it. Is this well founded, or, if well founded, might not the inconvenience be obviated at a trifling expence, by splitting the root into three or four pieces with a hoe or spade, to facilitate the feeding upon it? A few weeks maintenance of a flock, by means of this plant, after every other vegetable has failed in the spring, is of too great value, for the use of it to be lightly rejected.—*W. S.*

WELD.

WELD (dyers' weed, *reseda luteola*) is very little grown in the North Riding, except by one farmer near Scarborough, who, at the time of making this survey, and for some time previous thereto, cultivated it to a considerable extent: he sowed it in the latter end of August, upon a summer fallow; and it is ready to pull about the same time the following year. In 1793, he worked a piece of land for turnips, but was prevented sowing it by the drought, and therefore sowed it with rape, grass seeds, and weld seed, in July; and in about a month turned his lambs into it. In November, when he gave me the account, the weld looked extremely well and vigorous.

It is also sometimes sown among clover, and pulled out when it has got to maturity, before the clover is cut.

FLAX.

A LITTLE flax is grown in Ryedale, and in some few other parts of this Riding; but the quantity cultivated has been considerably on the decline of late years, the parliamentary bounty not appearing in the smallest degree to encourage the cultivation, since the expence and trouble of obtaining it is scarcely paid by the trifling amount of it.

Preparation.—It is mostly sown upon rich grass-land, after being once ploughed and harrowed fine; and sometimes upon arable land, made fine by repeated ploughing, harrowing and rolling, which must be attentively freed, immediately upon sowing, from all stones and clods; for the plant comes up with a broad top, and so very weak,
that

that it cannot make its way against the smallest resistance.

A clayey loam, when well pulverized, produces lime of the best quality, but a rich sandy loam will grow as much in quantity.

Quantity of Seed.—Two bushels are sown per acre, which are harrowed in with a light short-toothed harrow.

Time of Sowing.—Last week in April, and all May.

Culture.—Hand-weeding, which is performed on the knees, with great minuteness*.

Harvest.—The time of harvest is generally the latter end of July, or the beginning of August. If the crop be intended for line of the best quality, it must be pulled when the seeds are fully formed, but before they are quite ripe. If the seed be allowed to ripen, the quality of the flax is injured; it is rendered harsh, and the cloth made from it will not take a good colour in bleaching.

Produce.—From thirty to forty stones per acre, a middling crop.

By the records of the North Riding, it appears that the following bounties have been paid for the cultivation of this crop, for the last ten years:

		£.	s.	d.
In the year 1783	-	112	14	2
1784 and 85	-	57	15	2
1786	-	45	8	0
1787 and 88	-	35	16	0
1789	-	18	1	8
1790	-	43	4	8
1791	-	28	5	6

* "If, at the time of weeding, a piece of flax do not promise fair for a crop, it is always bad management to bestow further labour and expence upon it. A crop of turnips, or rape, will generally pay much better than such a crop of flax."—*Marsh. Rur. Econ. Yorksb.* vol. ii. p. 72.

		£.	s.	d.
In the year 1792	-	17	9	8
1793	-	25	12	6
1794	-	7	0	2

SAINFOIN.

VERY few acres of sainfoin are grown in this Riding, and not many calculated for it, as it requires a soil the more calcarious the better: the cultivation of it, however, is beginning to increase upon the vein of limestone on the south side of the Eastern Moorlands; and has been practised, but to no great extent, for many years on the limestone soil on the north side of the Howardian hills*.

Cultivation.—The seed is generally sown along with a spring crop of corn, immediately succeeding either a turnip or a summer fallow: the next year, it is only just topped with the scythe, to keep down the weeds which grow amongst it, as it does not flower till the second year.

Seed.—Six bushels per acre †.

Harvesting.

* The land at Scawton, Cold Kirby, and Morton, would grow excellent sainfoin, but has never been thought of; and they have scarce any winter food for their cattle: also some part of Sir RICHARD JOHNSTONE VANDEN BEMPEDE's estate is well adapted to it; but it is not practised. I allude to Silpho and Suffield heights.—*E. Cleaver, Esq.*

† Great caution is necessary in the choice of seeds, for it is a fact not generally known, that sainfoin seed more than a year old, will not vegetate; and therefore it should always be bought where you can be upon a certainty. I have been repeatedly imposed upon by the seedsmen, as it is difficult to distinguish the difference between old and new seed, except by experiment, which comes too late. For this reason, seedmen ought not to have any seed in their possession in the months of May, June, and July, for such seed can answer no other purpose than that of fraud or deception, since, if used, it will be the certain means of destroying the farmer's crop.

I am the more particular with respect to sainfoin, because it may be sown with success upon land of the most inferior value; and if well attended to, will

L

produce

Harvesting.—The same as clover.

Produce.—From two to three tons per acre, the first cutting. It is sometimes cut a second time, but more frequently eat with cattle and sheep; but it should never be eat very bare, or the stock will be liable to bite the bud, or crown of the root, thereby destroying the embryo of the next year's produce.

The hay is consumed both by horses and cattle, and is justly esteemed very nutritious.

It is not necessary to enter into detail upon the cultivation of this plant in this Riding, as it is not well understood here, and little is cultivated.

produce two tons of hay upon an acre, in a favourable season. At all events, it must not be stocked with any kind of cattle after Christmas, for they will destroy the bud for the next year. Hand manures seem the properest for encouraging the growth, as common dung has generally too many other grass-seeds in it; and sainfoin will admit of no rival to come near it.—*E. Cleaver, Esq.*

As it has generally been supposed by the farmers, that sainfoin is not a native of England, I am enabled to rectify that mistake, by referring them to North Burton Eastfield, near Bridlington, where it is to be seen in abundance, and growing quite naturally. The Hon. THOMAS HOWARD, of Ashstead, introduced it into the British husbandry about eighty or ninety years since. The late Sir WILLIAM ST. QUINTIN, and my father, were the first promoters of it in this neighbourhood. Such is the excellence of this valuable plant, that it merits almost a volume to be written in its praise. I have not seen the Derbyshire Report as yet, but am positive it would succeed well there, in all the limestone lands, particularly about Tideswell, Braddah, and Castleton, &c. and I believe at Chatsworth; but I did not see a stalk growing in that country about twenty years ago; if there was any, it escaped my notice.—*E. Cleaver, Esq.*

From the small quantity of moisture contained in the seed of sainfoin, I have reason to believe that if it were steeped a night or two before sowing, it would be of great use, as it would not only soften the husk, which gets too hard and dry by keeping, but would make the plants more vigorous.—*E. Cleaver, Esq.*

It always flowers the first year, in the south of England. It is easily known when the seed is more than a year old, as it becomes invariably black after that period.—*Anonymous.*

TOBACCO.

THIS plant was much cultivated for a few years prior to the year 1782, in the vale of York, about Stillington and Sutton, and also, in a less degree, in Ryedale.

“ In this district (Ryedale), it did not excite the notice of regal authority: in the richer parts of the vale, where the greatest quantity was raised, it was cured and manufactured by a man who had formerly been employed upon the tobacco plantations in America; and who not only cured it properly, but gave it the proper cut, and finally prepared it for the pipe.

“ But in the vale of York, the cultivators of it met with less favourable circumstances. Their tobacco was publicly burnt, and themselves severely fined and imprisoned. Penalties, it was said, were laid to the amount of thirty thousand pounds*.

“ This was enough to put a stop to the illegal cultivation of tobacco. But, perhaps rather unfortunately, it has likewise put a stop to the cultivation of that limited quantity which the law allows to be planted for the purposes of ‘physic and chirurgy.’

“ The quantity of land allowed to be cultivated for these purposes is, I believe, *half a rod*, which is somewhat more than *fifteen square yards* of ground; a patch of ground sufficient, under proper management, to raise tobacco enough for all the medical purposes of a farm-house; in which it is, on many occasions, useful. In cutaneous disorders of cattle and sheep, it is universally applied.

“ I will therefore just mention such circumstances respecting its cultivation in this neighbourhood, as I col-

* “The penalty, I believe, is 10*l.* a rod, or 160*0l.* an acre.”

lected in the autumn of 1782. I had not an opportunity of seeing the plants on the ground.

“ The *species* was probably *Nicotiana rustica*, the *English tobacco*; so called from the circumstance of its being the first species cultivated in England.

“ The seeds were procured at the seed shops, and handed about from one cultivator to another.

“ The seed-bed as rich and fine as possible.

“ The time of sowing, as soon as the weather became warm enough to make it vegetate; perhaps in April.

“ When the seedling plants were strong enough to bear removing, they were transplanted from the seed-bed to the patch on which they were intended to stand.

“ In the practice of one, they were planted out in quincunx manner, a foot asunder: in that of another, in rows two feet apart, and one foot asunder in the rows.

“ In both cases they were carefully hoed, and kept free from weeds during the summer.

“ In autumn, when the flowers began to drop off, they were cut, and dried in the shade.

“ When dry, the leaves were picked off, and pressed down close, in casks or other vessels.

“ The spring of 1782 being late, the plants did not, upon weak soils, reach maturity before the frosts began to set in. Hence a rich forcing soil seems to be necessary to the culture of tobacco, in this climate.

“ The vegetation, however, may be greatly forwarded by forcing the seedling plants in a hot-bed, and transplanting them out as soon as the frosts of spring are over.”

Since that time, it does not appear that any attempts have been made at the cultivation of tobacco. The people, paying obedience to laws passed many ages since, to encourage our tobacco plantations in America, have ceased to cultivate

cultivate a plant to which our climate seems well adapted, and of which it might now be good policy to promote the cultivation, as we have long since lost the colonies, for the encouragement of which such rigorous laws were enacted, and which now stand on our books the instruments of persecution to the ignorant or unwary, and no longer of supposed public utility.

VETCHES AND LENTILS.

THESE are rarely sown as a crop, but the latter are sometimes sown along with beans, from which they are easily separated with a sieve; and it is thought they improve the quality of the straw.

Winter tares have only been sown by a very few individuals, so that I am not enabled, for want of instances within the district under survey, to say much respecting them; but in my own practice within the East Riding, they have answered extremely well.

MUSTARD.

A CONSIDERABLE quantity of mustard is sown in the neighbourhood of York, and fields of it may be met with in other parts of the Riding. It is prepared for use in the city of York, where there are mills and machinery for the purpose; and it is afterwards sold under the name of Durham mustard; being prepared after the manner there practised, or as was there first done.

Preparation.—Mustard is sown either on land pared and burnt, or prepared and manured as for turnips.

Seed, and Time of Sowing.—Sow from one to two pecks per acre broadcast, in the early part of May.

Culture.—No culture whilst growing, except hand-weeding, if necessary.

Harvesting.—Shorn with the sickle in September, and generally stacked in the field; and thrashed out upon a cloth, at the convenience of the farmer.

Produce.—Two quarters per acre, is thought a good crop.

TEASLES.

Soil, and Preparation.—Teasles will only answer upon a strong soil: if the land is fresh, they do not require much manure: they are frequently sown upon pared and burnt land, as well as upon land ploughed out of swarth, and also after a winter and spring fallow.

Seed, and Time of Sowing.—Sow from one to two pecks of seed per acre, a little before May-day.

Culture whilst growing.—The surface of the ground, to the depth of about one inch and a half, is turned over with spades three times, viz. in June, October, and about Lady-day, at an expence of about 20s. per acre each time.

The plants are set out at about a foot distance, in the first operation.

Harvesting, and preparing for Market.—They are fit to reap, in the latter end of August, or beginning of September: this is done by cutting them off with about nine inches of stalk, and at the expence of 6s. per thousand bunches;

bunches; they are then tied up for 5s. per thousand; each bunch containing ten teasles.

Produce.—Ten packs per acre is a good crop; each pack containing 1350 bunches.

Price.—From three to five guineas per pack.

CHAPTER VIII.

GRASS.

SECT. I.—NATURAL MEADOWS AND PASTURES.

THE principal part of the grass-land in the North Riding, consists of old pasture and meadow, which is chiefly appropriated to the dairy. In most parts of this Riding, the dairy is a principal object of the farmer's attention; it is therefore natural to expect, that where grass is so prominent a feature in the cultivation of the district, that such district would excel in the management and improvement of that particular produce; but the reverse is the case with respect to most of the grazing parts of this Riding, and of the vale of York in particular: the fields there generally lie in broad lands, with very high ridges, the worst form possible; the consequence is, that the upper parts are over-run with moss, and the lower parts with rushes; and in case of drought, the ridges are much burnt, and do not so quickly receive advantage from rain, as when more level. The fields are also much over-run with thistles and ant-hills, and often with whins (furze); and the reason generally given for their lying in such a state is, that the occupiers are restricted from ploughing them out; but when the occupiers are also owners of the land, some other cause must be assigned for that effect; and this may frequently be found in their liability to the payment of tythes, the owner rather foregoing the profit which

which he would derive from breaking up his land, than add to that of the tythe-owner: thus the public suffers a great loss. In such a neglected and unproductive state (and under the eye of both the landlord and his agent), land may be frequently found, which, if ploughed, and under a proper system of husbandry, would be worth 20s. per acre, which, in its present state, is dear at 7s*.

In the dales of the Western Moorlands, much greater attention is paid to the improvement of the meadow than elsewhere, by keeping them clearer of noxious weeds, and properly manuring them. There the manure is spread to a degree of regularity and exactness rarely to be seen in any other part of the Riding†.

In no part of the Riding, does any management of grass-land occur, worthy of being recorded; for even the obvious improvement which might arise from alternately pasturing and mowing the land, is rarely attended to.

* This is a very good remark, and shews the absurdity of land-owners, who cannot attend to their own estates, employing agents who are ignorant of practical husbandry.—*Anonymous*.

If the manure of the farm were honestly carried to the meadow ground, that ground the farmer could never wish to see ploughed; but when it is carried to fallow land, to produce wheat, and so to save lime, how can the grass-land appear to advantage; its produce cut off annually, and hard eat in winter? Poverty struck!—then, says the farmer, you must let this be ploughed; it grows mossy (the reason is obvious); he ploughs; and it cannot, after such pilfering work, be reinstated in the farmer's life-time.—*Anonymous*.

Is it not necessary, on some farms, that a quantity of old pasture should be reserved, to give a sufficient firmness to butter, to bear land-carriage?—*W. Dinsdale*.

Lands of poor soil, once exhausted, are not profitable in a series of time; you are either to plough out every three or four years, at an expence equal to, if not exceeding the profit, or lay down, and wait a length of time indeed. If you plough out such poor land, that has been resting some years, you are turning up some soil that you had at the grass roots.—*Anonymous*.

† Old pasture lands are profitably manured by dressing up in March, and half-eating in winter only; by which you have a great deal of vegetable substance added to the soil: your grass roots are invigorated so much, that the pastures may be converted into meadows. What can improve grass-land so much as alternately changing from pasture to meadow?—*Anonymous*.

Many

Many dairy farmers think it of material consequence to preserve some of their old pastures in an unimproved state, as the milk produced on them churns with more ease, and the butter keeps better, than if those lands, naturally rich, were improved to their highest state: some have experienced, after their whole farm has been ploughed up, and the land highly manured, particularly where much lime has been laid upon it, great difficulty, both in making and preserving their butter in the warmer months of the year; whereas, before such cultivation, no such difficulty occurred, and their butter was of the best quality. This throws much light on the cause why Irish butter is preferred on ship board, and in foreign countries, to English butter; the country is less cultivated, and therefore the butter is firmer and more waxy; which quality renders it more capable of resisting the vicissitudes of climate.

The produce of meadows is various; but many of the old fields in the vale of York, and Ryedale, are highly productive, though they have been mowed for ages, and rarely pastured or manured, and no means taken of improving them. Land of this description, which experience no improvement of their crop, or increase of rent, from the vicinity of a town, may produce from one ton to a ton and a half per acre.

SECT. II.—ARTIFICIAL GRASSES.

THE sowing of grass-seeds, to continue as pasture for a few years, is too little practised in every part of this Riding, though it is more attended to in that well cultivated part of the country lying betwixt Borough-bridge and Catterick, than elsewhere.

Grass-

Grass-seeds are chiefly sown, with the intention of the land remaining permanently in grass; and this is often done with the second crop of corn after a fallow, when the land is become foul and exhausted; nevertheless, there are several farmers who sow their grass-seed with the first crop after a fallow or turnips, and a few in Ryedale, who sow them upon a spring fallow, without corn, upon strong land, and find it answer much better than sowing them with corn. There is a very evident superiority in favour of this practice, when compared with the other.

The method is, to sow the grass-seed as soon in spring as the land can be made fit; the tops of the weeds which may grow amongst them, are mown off twice in the course of summer, and the land rolled after each mowing; by autumn, if the season has been tolerably favourable, a rich luxuriant pasture is produced*.

About

* Why not hand-weed? Should such repeated rolling be performed on all soils? Surely not.—*Cler. Ebor.*

On dry sand soils, rolling will be beneficial, if done in a dry season.—*J. T.*

Although this method is well adapted to strong land, an improvement may be made upon it, by sowing along with the grass-seeds one bushel of tares, or vetches. When this is practised, the produce should either be eat off with sheep, or be mown for hay, as soon as the vetches are got well into flower: by this method, the produce mown is rendered valuable; but when nothing else than grass-seeds is sown, it is of very little value, rarely worth the expence of cutting. The seeds, thus having a free admission of air, will spread, and get strength fast; and the tares springing again, will with the seeds form in a short time a most excellent pasture for sheep.

If the tares are wholly eat off by sheep, they should not be turned in until the ground is got well covered by the crop, and in such numbers as to keep it moderately eat down: by this management, a prodigious number of sheep may be kept, in proportion to the quantity of land; by which means a great return of manure is obtained, to the improvement of the seeds.

I find it the best practice, not to sow the seeds until a month or six weeks after the last ploughing; in the fore part of that time, the land should be manured, if necessary, with short manure, and repeated opportunities taken in dry weather, to harrow it well; and it should be once rolled; by these means the weeds are destroyed, the land gets a considerable degree of firmness, the manure is well mixed with the soil which lies within reach of the roots of the grass,

About Halnaby, they sow hay-seeds and red clover on their worst land, and let it lie about twelve years, and manure it, whilst young, with fold-yard manure.

Kind, and Quality of Seed.—The general practice is to sow white clover, trefoil*, rib-grass, and hay-seeds, with which, some mix red clover; some others sow rye-grass instead of hay-seeds. It is common to sow from ten to fourteen pounds of small seeds per acre, about half of which is white clover.

JOHN DOWKER, of Salton, sows, of white clover fourteen pounds, and of trefoil, rib-grass, and red clover, mixed together, seven pounds, and one quarter of hay-seeds, or, in lieu of the hay-seeds, two bushels of rye-grass: this is often upon a rich strong soil. E. CLEAVER sows twenty bushels of well-dressed hay-seeds, ten pounds of white clover, and four pounds of red clover; but where the land is very shallow, two bushels of rye-grass instead of the hay-seeds.

Several people will not sow hay-seeds, from a just idea that they are composed of “they don’t know what,” and therefore prefer rye-grass †.

In

grass, and the seeds lie at a more equal depth than when the land is fresh; if any weeds should afterwards appear, care should be taken to extirpate them.—

J. T.

* Trefoil is found to answer remarkably well for sheep upon the thin limestone soil on the northern margin of Ryedale.—J.

† The abuse practised by the hay-seed gatherers, of late years, is become so notorious, that you cannot get any thing from them but a wild bent, or oat grass; for they have a trick of riddling out in dressing, all the rib-grass, white clover, &c. and leave you nothing but rubbish unfit for use; the best hay-seeds are produced from the old meadow lands.—E. Cleaver.

If they are the produce of fine rich herbage, no objection ought to be made to such seeds, because a name cannot be appropriated to each sort.—W. Fox.

After the land is thoroughly cleaned from noxious weeds, and properly encouraged for the reception of the seed, judgment should be exercised in procuring good and proper hay-seeds to suit the nature of the land intended to be sown down.

If

In the dales of the Eastern Moorlands, it is the common practice, if the land has not been longer than five or six years in ploughing, not to sow any grass-seeds when it is laid down, but to let it acquire such a covering as nature will afford it; the principal part of this, consists of the meadow soft grass (*halcus lanatus*, provincially, the Duffield grass), a very ordinary grass either for meadow or pasture*. The reason they assign for continuing in that old practice is, that if the land has not been ploughed longer than five or six years, it gets well covered in one year, and that white clover does not suit their soil, except where it is sandy upon a shale.

If land which has been a longer time than the above in ploughing, is wanted to be laid down, they sow rib-grass and hay-seeds, the latter being the produce of those natural meadows.

SECT. III.—HAY HARVEST.

In that branch of rural business, this district (excepting the dales on the Western Moorlands) is generally deficient,

If it is up-land, and free from floods, then procure your grass-seeds from the best old up-land pasture, and not from low meadow, liable to be flooded. If it consists of ings, or low-land adjoining a river, then refrain from sowing hay-seeds grown on up-land, and procure your seeds from good low meadows; for the seeds of up-land hay will not prosper well on low-land, nor the hay-seeds of water-land upon ground not liable to be flooded. This remark is of more importance than the generality of farmers conceive. Sow about eight bushels of hay-seeds and ten pounds of white clover seed to an acre. To procure your hay-seeds, ride into the neighbouring farms, see which of them has meadow growing that will suit your purpose; by which means you may obtain your desire, which is difficult to be done at the seedsman's shop, or with hostlers at the public inns.—*M. G. Steele.*

* This grass being natural to the soil, seems to demand attention, and might, most likely, by culture, be brought to high perfection.—*W. Fox.*

no regular mode being followed. A great want of attention in general prevails, in getting the crop dry with as little loss of the virtues of the grass as may be. In this particular, the western dales excel every other district of which I have heard. For the following account of the process of hay-making there, I am indebted to my friend WILLIAM FOTHERGILL*, of Carr End.

“ Hay-making being of such great importance in agriculture, perhaps the method practised in the dales of the Western Moorlands deserves to be better known; but may we not first consider it as an axiom, that *speedy and equal* exsiccation is of primary consequence to the preservation of the virtues of dried plants, whether for medical or economical purposes; and this granted, then let us see how far the practice in these dales is likely to obtain the desired end.

“ Mowing being the same in all places, I shall pass over that operation, and proceed to the next, which is spreading the swathes abroad; this (provided the weather is promising), is always done as soon after mowing as the vacancies betwixt the swathes are a little dried; but always with the hands, not with forks, the miserable invention of indolence: for if the hay-makers are expert, they will not only do it in less time, but more completely than with forks. The grass being strewed equally, and laid as light on the ground as possible, is suffered to remain in that condition till next day, about eleven o'clock, when the upper surface of the grass will be found considerably dried and withered; the hay-makers then begin at the side of the field farthest from the wind, and make the grass into small rows, which, if artfully performed, will expose an entirely new surface to the influence of the sun and air: this

* The nephew of the late Dr. FOTHERGILL.

operation is performed with great facility*. In the evening of the same day, the rows are made into small cocks ('foot cocks'); the next morning, as soon as the dew is well evaporated, the cocks are spread abroad carefully by the hand; about noon†, when thought necessary, it is again made into small rows, called turnings, which, by varying the surface, expedites its complete drying; and if the weather has been perfectly fine, from the cutting of the grass, it is found sufficiently dry to carry to the barn, or rick, if the quantity to be put together is not very great; but if that is the case, it is sometimes made into large cocks, where it is suffered to undergo a slight fermentation, but is never allowed to remain long before it is carried, as the base of the cock would be injured by the moisture of the ground, as well as the outside by the influence of the weather.

"In the dales, where the above method of hay-making is practised, there is scarcely an acre in tillage. Hay is the grand object of the farmer, and he bestows upon it the most sedulous attention, and has many difficulties to combat: the season commences late, the surrounding hills occasion frequent and sudden showers, and the meadows, which are all natural, abound with the *trifolium repens* and *pratense*, *ranunculus bulbosus*, *repens* and *acris*, *spriræa ulmaria*, *sanguisorba officinalis*, *plantago lanceolata*, *geranium sylvaticum* and *pratense*, *betonica officinalis*, &c.; which being more succulent than the grasses properly so called, are more difficult to harvest than the produce of meadows, where the grasses greatly predominate; yet, with all these difficulties, more hay is reaped in these dales with the same number of hands, than in any other place I have

* By the rake-head. There is a particular art in this movement of the rake, which I have often attempted to teach the hay-makers of the North, but without effect.—*J. Bailie*.

† I suppose in fine weather, ten o'clock.—*J. Bailie*.

seen. The excellence of this method consists in exposing as great a surface as possible to the influence of the sun and air, and varying that surface as often as necessary, by the most simple operations; by which means the whole is equally and readily dried. This certainly must be preferable to the practice which prevails in many parts of England, of letting the grass lie several days in swathes. The operation of the dew by night, and the sun by day, deprives the upper surface of smell, taste, and every essential of good hay, whilst the under part remains green* as when cut; it is then carelessly thrown abroad with forks, and suffered to remain till dry enough to be carried. Let reason and experience determine, whether hay reaped in this, or the manner first mentioned, is likely to be more nutritive and more palatable."

In the general practice of hay-making in this country, two bad customs greatly prevail—the grass is left too long unturned in the field after the scythe; and the cocks (or, if made into "pikes") the pikes, remain too long in the field after the grass is made into hay: the former custom arises from ignorance or inattention; it was the practice of our forefathers, and therefore is still thought binding on us, their children: it is not unusual for it to remain in this state, till the fog that is growing, and the grass that has been cut, are become equally yellow, from the exclusion of the air, and the damp state in which they have so long remained: grass ought always to be spread as soon as possible after the scythe, as soon as ever an hour or two of sun and air has dried the surface of the ground. The last custom arises probably from the almost universal practice of stacking in the field, and the fondness of the farming men in shewing their skill in making large stacks, in which they greatly excel in many parts of this county.

* Or, what is worse, it turns yellow.—*J. Baillie.*

In this case, the hay, after it is made, must necessarily remain some time in the field; for the stack can only be made gradually; it must have time to settle, and cannot be finished at less than three or four intervals; and these intervals are frequently protracted, by the hands being taken away for other employments, the master confiding in the hay being safe all this time; whereas, by its exposure in that loose state, it is liable to much injury; winds blow it about, the outside is injured by the weather, and by the bottoms on the earth the vegetation of the fog under it, entirely prevented: to remedy this in some degree, an expedient has been adopted, which is, to put the hay into pikes, that is, larger cocks, containing about a load each, till such time as it is fit to put into the stack; or the stack can be finished; but this is at best a palliative, as in this state it is liable to considerable injury*.

Hay is not often housed in the district under survey, except in the Moorlands; and that most economical structure, a Dutch barn (a roof upon pillars), is rarely to be met with out of the yard of a gentleman.

A gentleman in this district, has frequently found it of great advantage to salt his hay, when it has received much rain in the field, and particularly the second crop of clover: the salt checks the fermentation, and prevents moulding. If straw be mixed with such hay, the heating of the stack is still farther prevented by the straw imbibing the moisture. Cattle will eat such salted hay, and even the straw mixed with it, more eagerly than better hay not salted, and thrive faster upon it†.

* In precarious weather, putting hay into pikes for a few days, is an useful method.—J. R.

† This can no longer be done with salt at 14s. a bushel.—W. S.

SECT. IV.—FEEDING.

THE usual time for breaking the pastures, is the 12th of May; from which time they continue regularly stocked until about October, when, if the stock consists of milch-cows, or feeding cattle and sheep, they are removed to "fog" (after-grass); the pastures, with the addition of the stubbles, remain stocked during the winter with store-sheep, or lean cattle; but the latter are by many farmers taken into the straw-yard for the night. The herbage of the pastures is thus completely destroyed before winter, and the land thus left naked is starved, and the growth of moss greatly encouraged, to the almost certain ruin of the grass-land. An instance has not occurred in the course of this survey, of the practice of preserving a considerable part of the summer growth of grass upon the land for spring feed; a practice well worthy of attention. This winter clothing enriches the swarth, destroys the moss, and by keeping the roots of the grass warm, causes an early vegetation in spring, when the scarcity of the herbage so much enhances the value of it. On farms, the soil of which is not adapted to turnips, this practice would be peculiarly beneficial.

In March, the land intended to be pastured the ensuing summer, is, or ought to be, freed, and the stock put into the land intended to be mown, where they remain until those pastures are broke, in the beginning of May.

In the dales of the Moorlands, the lower lands only are adapted to meadow, consequently the land cannot be changed alternately from meadow to pasture, as may be practised in many other parts of the Riding, though there, as before noticed, the practice is not sufficiently attended to.

to. There are many instances of cow-pastures which have been invariably summer-fed during several generations*.

The best farmers usually pasture their new-laid ground the first two years, and that chiefly with sheep; as sheep improve grass-land more than any other kind of stock, both by their treading more lightly and uniformly, and by the dung and urine being more regularly dispersed over the land. But the practice of eating them very bare during the first autumn and winter after sowing, and also mowing them the first summer, is too prevalent. Such practices are the ruin of seeds†.

Nothing particular occurs in the manner of grazing, feeding, or stocking, the pastures of this district: the stock is of such various sizes, and the land of such various qualities, that no useful average can be stated; the Moorlands starve one small sheep on half a score acres, and pastures on the low lands may be produced which will graze an ox, or keep a cow of the largest size, on one acre. The practice of shifting the stock from one pasture to another, of mixing different kinds of stock together in a due proportion in the same pasture, and understocking with sheep, pastures destined for feeding larger cattle, is not as well understood in this district as in many other parts of England.

* Good old pasture-lands may be much improved by being mown once in three or four years: by this mode of management, the herbage will become sweeter, and the feeding more regular; I mean, all tufts and patches of grass will be taken away.—*J. Smeddle.*

† Pasturing new-laid ground is most excellent management; the several grasses, by being frequently cropped, become not only firmer in nature, but much more numerous. Stock, when depasturing new lands, ought to be often changed; if ever you over-eat them, they will require some time to recover their usual vigour.

New-laid grounds sometimes give sheep the rot, particularly three or four years laid on indifferent soil.—*J. Smeddle.*

CHAPTER IX.

GARDENS AND ORCHARDS.

MANUFACTURES having fortunately made but little progress in this Riding, there are not many large towns, and consequently the public gardens are not very extensive, though equal to the demand which is made for vegetables.

The farmers in general, are very inattentive to their gardens, probably in consequence of their using for culinary purposes, few vegetables except potatoes and turnips, which are the produce of their fields. The gardens of the labourers may frequently be seen better cultivated than those of the farmers; because the labourer occupies no other land, and his garden is appropriated to the cultivation of potatoes, and other useful vegetables, for his family. Some pay much attention to their little gardens, and hold out the prospect that others would do the same, were only a little ground annexed to their cottages, which is too seldom the case.

Gentlemen's gardens do not come under our survey; it is therefore only necessary to say, that, in many instances, in this Riding, their cultivation is carried on to as great perfection as in any part of England, and that horticulture is no where, in general, better understood than by the gardeners of this district.

There are two or three considerable nursery-gardens in this Riding, that raise large quantities of forest-trees, and shrubs,

shrubs, for the supply of the public; the proprietors of which contract to plant on an extensive scale, and at reasonable prices.

Plantations of a mixture of forest-trees of two years old, and planted at about four feet distance, are made, at from three guineas to 4l. per acre, and of trees of three years old, at from 5 to 6l. per acre; and all failures replaced for two years succeeding.

The orchards are likewise not extensive, and much less so in Ryedale than they were a century ago, though they are very fruitful in that district, as well as in many other parts of the Riding; and there is no doubt but the cultivation of them might be very profitably extended, for the purpose of beverage. At present, considerable quantities of apples are sent to Leeds, and many from thence into Lancashire: these are markets which would take off much larger quantities than can at present be spared.

CHAPTER X.

WOOD-LANDS*.

WHEN the extent of the North Riding is considered, that of the woods will be found comparatively small: their amount cannot be spoken of with perfect exactness, but the following estimate of them in each district of the

* Most people, I think, concur in this point, that for the last half century, the wood in this kingdom has been terribly on the decline. That gloomy prospect is now become tremendous, and sufficiently visible to awaken the fears of every thinking person. Besides the avidity with which wood has been, and continues to be, cut down by the generality of its owners, ninety-nine farmers in one hundred are its most mortal enemies!—they study its destruction with more than gothic ignorance and barbarity. Let us cast our thoughts towards the future support and welfare of our navy—our sole protection!—and we must tremble at the continual disappearance of our oak! Let no object, or false-grounded theory whatever, prevent the immediate revival of the good old custom of planting oak and true English elm in the hedge-rows of every farm: their roots strike downwards, and little, if any, hurt will be done to agriculture by a moderate planting of those trees in the hedge-rows; and let the nooks and corners of fields of light land be fenced off and planted with ash. Hedge-row trees are the best calculated for the use of the navy; tend vastly to promote the early growth of grass, and would greatly enrich the present dreary aspect of vast tracts of country. Some speedy method must be adopted to remedy this great national evil, or, besides the danger from fierce external foes, we must determine to go barefoot: we should never think of looking to foreign countries for a constant supply of oak-bark to tan our leather. Let Britain help herself! Each nobleman and gentleman must have his own private nursery—he should insert in the agreement with his tenants, a clause to compel them to plant and protect a certain number of good oak, elm, and ash trees, annually upon their farms, to be found by the landlord; and then observe that the performance of that clause be as rigidly looked to, as the payment of the rent—then will the rising generation have cause to bless the wisdom and policy of the present age.—*M. G. Steele, Esq.*

Riding,

Riding, is as near the truth as could be ascertained during the present survey; but is thought to be within the quantity :

	acres.
The coast, - - -	3000
Cleveland, - - -	1500
The vale of York, with the Howardian hills, - - -	11000
Ryedale, with the East and West Marshes, - - -	6000
Eastern Moorlands, - - -	3000
Western ditto, - - -	1000
	25500

Exclusive of the above, the North Riding produces a considerable quantity of timber in the hedge-rows, particularly in the vale of York, the Howardian hills, and Ryedale; though in them, as well as the Wood-lands, far less now than at no distant period heretofore; nor has the size of the timber that remains, decreased faster than the number of the trees. There is reason also to believe, that woods formerly covered great tracts of country, where not a tree now remains, and which, it is the present opinion, are incapable of growing timber; but evident remains of trees, and traces of woods, still indicate that the Moorlands were once a forest. The spontaneous produce of the Wood-lands is principally oak, ash, and broad-leaved or witch elm; the produce of the mountains, much birch and alder; and of the hedge-rows and cultivated places, various other trees, the consequence of improvements and art.

Large full-grown timber is now become very scarce; and the Surveyor is unable to mention many estates on which more than a few such trees can be found, except those of

C. S. DUNCOMBE, Esq. and Lord CARLISLE. Within the memory of man, full-grown timber abounded in many parts of the district under survey.

Management of Woods.—Many of the woods are under the course of what is called *spring-felling*, that is, felling the whole growth of the trees and underwood as near as possible to the ground, but so as not to injure the crown of the roots*. By this management, a fresh and numerous succession soon arises from the old stool, and from the seed scattered on the ground, which, after being occasionally thinned during the period of their growth, and having been well defended from cattle, in about thirty years are again ready for the axe. Oak, ash, and broad-leaved elm, are equally capable of this re-production of timber from the old root.

Spring wood, from its age, is of course small, but serves for many purposes of husbandry and country use.

Some, in going over their woods about every twenty years, raise a constant succession of timber, by leaving each time a certain number of the most likely young trees on each acre, and a certain number of every preceding thinning; so that at the same time they leave a considerable number of trees of twenty years old, they leave also a certain number of twice, three times, four times, or upwards, of that age; fewer of each in proportion to their age. This method seems to raise the best trees, and greatest quantity

* Care should be taken to leave the stool round and smooth, to prevent the lodgement of wet.—*Cler. Ebor.*

Where a succession of wood is wanted, grub-felling ought always to be guarded against; if the purchaser of the wood is not restricted from it, interest will induce him to it, as by that means he will get one or two feet more timber in a large tree, and which is so much more than he pays for, the tree being measured only from the surface of the ground. This mode of felling, entirely destroys all succession, and is one principal cause of the great decrease of oak timber.—*T. Priestman,*

of

of timber, because the wood, suffering little alteration, affords the most uniform and regular protection to the growth of the trees; and probably is the most profitable mode of managing wood-lands. In these woods, some of the timber arrives at full maturity before it is cut down, and is fit for ship-building, or any large purposes. Several large woods in this Riding are under this management*.

When woods are suffered to grow to their full size, it is the practice of some to have them weeded, that is, thinned of the smaller, and too numerous trees and under-wood, as often as these acquire a size sufficient to make them useful for rails, stakes, or bindings for hedges, or other similar purposes, which is generally once in about seven years; at last the whole wood, when arrived at maturity, is cut down at the same time, and again trained in a similar manner for timber†. This is the same as the process first mentioned, of spring-felling, only continued for a greater number of years, till the timber arrives at maturity, instead of being cut down at about the end of thirty years.

Instances may be seen in this district, of that mode of management (not unfrequent in other places), of leaving at certain distances, when the timber and under-wood are cut down, the thriving young trees, which so left, are

* No objection seems to arise to this mode of management, except the additional trouble that is required at the time of felling the timber, to prevent it in its fall from doing any injury to that which is intended to remain.—*J. T.*

The above objection is obviated by a little more care in felling; or, where a tree in its perfect state cannot fall without injury to others, lopping off most of the head before felling, as is usually practised where trees are barked standing. Trees thus treated, fall much lighter than otherwise, and may be made to fall, by taking off the weight of the branches judiciously, in any direction that may be wished for; in directions entirely opposite to those in which they would fall in consequence of the natural position of the weight of their heads. Expert woodmen can direct their fall to the greatest accuracy.—*W. S.*

† I believe the best way is to cut down the whole wood at once; for if you do more than thin it, the standards that are left almost immediately perish.—

S. Cleaver.

very

very properly called *wavers*, from their being agitated by every breeze. These starved and deserted orphans rarely make any progress beyond their present state: they become stunted in their growth, and generally arrive at a premature end. Had these thrifty saplings been cut down with the rest of the wood, the shoots from them would probably have formed the future timber; the best of which is afterwards lost, by the expectation of gaining some advantage from the already acquired growth of these young trees; an expectation almost universally disappointed. This is probably the worst mode of managing wood-lands, the one that most seldom succeeds, and which is now going fast out of use.

Woods under the best management practised in this country, are held to pay very well on any soil; in many instances, from 12s. to 15s. per acre, where the land, though capable of cultivation, would not be worth as much if cultivated; and that rent will be produced on many of the steep and rocky hill sides in the Moorlands, which, if not covered with timber, would be of no value at all—a great encouragement this to the care of the wood-lands, but to which attention is too seldom paid. In general, the wood-lands of this district are much neglected.

Selling.—It is the practice in this Riding to sell the falls of wood to professional wood-buyers, who cut up the trees in the woods, according to the purposes for which they are best calculated, and the most valuable. It may happen, that in a tree, there may be some particular bend, which may be of double the value for ship-timber that it would be for any other purpose, while another part of the tree may be of the greatest value for house-building, or for particular purposes of manufactures or husbandry. By this mode of manufacturing the timber, by means of a middle man between the grower and the consumer, much inconvenience

ence is avoided: the consumer, let him be ship-builder or house-builder, can suit himself with such pieces as are best calculated for his purpose, without the inconvenience of purchasing along with them a quantity of timber not calculated for his business.

All the ship-timber grown in the Riding, is thus cut up in the woods, into shapes ready for the builder to make use of. In a country where carriage of timber is so expensive as in some parts of this Riding, owing to the difficulties of the roads, and the distance it is carried by land to the yards, at an expence amounting, in some instances, to one-half of its value, or upwards, this mode of manufacture causes an essential saving to the ship-builders. Trees may have imperfections, which, till they are cut into, may not be discovered: by cutting them up in the woods, these blemishes are probably detected, and the heavy expence of carriage of such faulty and useless timber is saved to the builder.

This knowledge of adapting timber to its future purposes in ship-building, is peculiar to the woodmen of this part of England, and the application of it highly valuable to every one concerned in the timber, to the grower, the purchaser, and the customer; in most other parts of England, it is apprehended that the timber is carried to the ship-yard, rough as it grew, which renders the carriage more difficult and expensive, and is frequently attended with considerable loss. The trees are here usually felled, as well as barked, cut up, and squared by the ton of forty feet; the usual wages, 1s. per ton for felling; squaring the finest wood, not under 2s. 3d. or coarsest not above 3s.: a good workman, in the long days of summer, will square a ton of the coarsest timber. The ports of Scarborough and Whitby consume most of the ship-timber produced in this Riding, except such as may grow towards the western boundary; the present prices there are about 3l. per ton,
or

or 1s. 6d. per foot, delivered in the yard; and though ship-timber is now extremely scarce, the markets are over-stocked; so few ships being now (January 1798) building, the consequence of war, and of the carrying-trade being diverted into other channels.

The oak-timber grown in great part of this Riding, though not large, is most excellent; produced, as it chiefly is, upon sound, and often rocky, ground, its growth is very slow, which renders it extremely hard and durable; and probably to the use of much of it, the ship-builders of Whitby owe their riches, and the ships they build, their great celebrity.

Ash timber, which grows abundantly, and to great perfection in this Riding, is particularly valuable in a dairy country, for the purpose of making butter-firkins; and in their manufacture it is chiefly consumed; the rest is worked up by the cart-wrights, for husbandry purposes: its present price is from 1s. to 1s. 6d. a foot, according to quality; a price as great, on the spot where it grows, as that of oak at the place of consumption, where the price has been greatly enhanced by a long land-carriage.

Plantations.—Planting, considering the great number of proprietors of extensive estates, and the great proportion of land which lies in an unprofitable state, and is fit for little else than being planted, has been very little attended to.

The late Sir CHARLES TURNER made some extensive plantations on the Eastern Moorlands, near Kildale; but as he died soon after, they have not received that attention which otherwise might possibly have been shewn to them.

One very extensive tract is entirely destroyed; and though a considerable number of acres remain in other places, which are thriving, where the trees stand sufficiently close to shelter each other, yet even in them, in
many

many places, they are very thin: whether they were originally planted so, or have become so by casualties, does not appear; those that are left, however, shew that trees will thrive upon the highest, most exposed, and barren of the moors.

The kinds are chiefly Scotch fir, larch, and spruce, with some oaks and a few beech.

Considering the disadvantages which these plantations have laboured under, the trees that remain hold out sufficient encouragement for planting in that country.

The late FRANCIS CHOLMELEY, Esq. and his son, FRANCIS CHOLMELEY, Esq. of Bransby, have made some considerable plantations, chiefly of larches and firs, upon the sides of the hills, and other barren parts of their estates, which were not worthy of cultivation.

The plantations were begun about thirty-eight years since, and have been annually increased from that time: some of the first-planted larches have been cut down, and measure from forty to fifty-five feet in length, and from three feet to four feet four inches in girth.

FRANCIS CHOLMELEY has found that the timber of the larch is very durable for every purpose*: he has used it for gate-posts, and has had some of them taken up after having been in the ground eleven years, which, he says, were as sound and perfect as when cut out of the tree.

The plantations already finished have a pretty large mixture of firs and other trees; but the larch being so much

* As a proof of the durability of larch, some posts made of small larch trees, not squaring more than three or four inches, were set in the ground in the spring of 1779, nearly the whole of which are still standing (1798), and apparently sound; a rail made of a small tree, not more than two inches diameter at the small end, has been in use from the same period, and has still some of the bark adhering to it: though all sap, and exposed thus to the air and weather, it is still perfectly sound.—W. S.

more valuable, thriving so well, and being of such quick growth, he intends, in future, chiefly to plant it.

He estimates his planting to cost him not more than 50s. per acre, at the utmost, as he is in the practice of raising his own plants in the following manner:

The beds on which the seeds are to be sown, are dug in the spring, and the larch cones laid upon their surface; these the sun and winds drying, cause them to open, and shed a considerable part of their seed; and the cones are afterwards beaten to get out the remainder; they are then covered very slightly with earth, and kept clean weeded. At first, great care is necessary to keep the birds from them, otherwise they will pick off the seed from the head of the plants just peeping above ground.

The plants are pricked out at one year old; and he finds it best to transplant them a second time, and finally plants them out, at four years old, though those which have been only once removed, answer to be planted out at three or four years old; but the roots are not so good as of those which have been twice transplanted.

In 1791, THOMAS RICHARDSON, of Handale Abbey, planted forty acres of land with mixed timber trees, which were thriving well in 1795, and for which a premium was granted him by the Society of Arts; an account of which may be seen in the fourteenth volume of their Transactions, for the year 1796.

Several plantations have also been made in the western part of the Riding, which are generally thriving, and likely soon to repay their owners*.

* Scotch firs, on the western hills, are more difficult to rear than the larch; so much so, that the former are frequently destroyed by either too great heat or severe cold; besides, if sheep reach them, they eat the Scotch fir sooner than the larch. The ground should be drained from water. — *Anonymous*.

A neglect of planting trees in the hedge-rows, and of a proper management of those which are now growing there, is very evident*: tenants, on some estates, are suffered to lop the hedge-row timber; in doing which, large boughs are frequently cut off in a very rough manner, so as to retain water; this causes the heart of the stool of the branch to decay, and in a few years, water penetrates the main trunk, whereby the timber is greatly injured. In a publication, entitled "Planting, and Rural Ornament," an excellent mode of management of hedge-row timber is recommended; and as it is extremely desirable that this hitherto neglected department of rural economy should be better attended to, I shall here quote it.

* It appears to me, from the most accurate observations, that in less than a century, there will be a great scarcity of wood in the North Riding of York. The axe is often heard, but the planter is seldom seen.

The great quantity of wood which has lately been cut down out of the hedge-rows, makes the country much less fertile, both in appearance and in reality. The society of trees in hedge-rows, in my opinion, tend greatly to sweeten the northern climate. The farmers say, "knock them up, no corn will grow near them;" not considering, that the general fertility of his soil greatly depends upon the shelter it receives from his neighbours' woods and trees. He who cuts down, and neglects planting trees, steals from the community; he robs the Agricultural Fund.

We have no regular woods in the Hundred of Gilling West worth notice, save Mr. MILBANK's and Mr. CRADOCK's; the former abounds with fine ship-timber; but being situate twenty-seven miles from a port (Stockton) makes it but an indifferent naval object.

Since my own remark respecting trees in hedge-rows, I have been sensibly informed by Mr. MARSHALL, of Greta-bridge, that all kinds of wood planted for the melioration of the climate, ought not to be placed in hedge-rows. He strictly observes, that trees planted in hedge-rows are not only inimical to the fertility of the soil, by their poisonous drop and extensive roots, which rob every thing within their influence, but highly destructive to the hedge itself, destroying every quick under them: he judiciously observes, that trees ought to be planted in a corner of the field, or upon a piece of waste ground. W. JOHNSON, Esq. of Newsham, subscribes to Mr. MARSHALL's opinion.

The planting of basket-willows is greatly neglected in this Riding: upon a wet clayey soil, they will yield an extravagant price.—*J. Smeddle.*

“ With

“ With respect to the young timbers which frequently abound in rough hedge-rows, we venture to recommend the following management :

“ Upon estates, whose hedge-timber has been little attended to (and we are sorry to say, such is the case on nine-tenths of the estates in this kingdom), the first step is to set out the plants, and clear away the incumbrances.

“ After what has been said, it may be needless to repeat here, that where the choice rests upon the species of tree, the oak should invariably be chosen ; for every other species we consider as a kind of incumbrance, which ought to be removed as soon as it can with any colour of propriety.

“ It is a bad practice to permit hedges to remain crowded with timber-stands ; they should, in general, be set out singly, and at distances proportioned to their respective sizes, so that their tops be not suffered to interfere too much with each other.

“ There is, however, one exception to this rule : where two trees, standing near each other, have grown up in such a manner that their joint branches form in appearance but one top, they should both be permitted to stand ; for if one of them be removed, the other will not only take an unsightly outline, but will receive a check in its growth, which it will not overcome for several years. It is nevertheless observable, that twin trees, as well as those which are double stemmed, are dangerous to stock ; not only cattle, but even horses, have been known to be strangled, by getting their heads locked in between them.

“ The method of training the young plants has already been described ; it now only remains to say a few words as to the pruning, and setting up hedge-row timber.

“ Low-headed trees have been already condemned, as being injurious to the hedge, as well as to the corn which grows

grows under them. To remove or alleviate these evils without injuring the tree itself, requires the best skill of the woodman. The usual method is to hack off the offending bough; no matter how, nor where, but most probably a few inches from the body of the tree, with an axe; leaving the end of the stump ragged, and full of clefts and fissures, which, by receiving and retaining the wet that drips upon them, render the wound incurable. The mortification, in a short time, is communicated to the stem, in which a recess, or hollow, being once formed, so as to receive or retain water, the decline of the tree, though otherwise in its prime, from that time must be dated; and if not presently taken down, it will, in a few years, be only fit for firewood. How many thousand timber trees stand at this hour in the predicament here described, merely through injudicious lopping! It is this which has brought hedge-row timber into a disrepute, otherwise undeserved.

“There is a wonderful similarity in the operations of nature, upon the vegetable and the animal creation. A slight wound in the animal body soon heals up, and skins over, while the wound succeeding the amputation of a limb is with difficulty cicatrized. The effects are similar with respect to the vegetable body; a twig may be taken off with safety, while the amputation of a large bough will endanger the life of the tree. Again, pare off a small portion of the outer bark of a young thriving tree, the first summer’s sap will heal up the wound; if a small twig had been taken off with this patch of bark, the effect would have been nearly the same; the wound would have been cicatrized, or barked over in a similar manner, and the body of the tree as safely secured from outward injury as if no such amputation had taken place. Even a considerable branch may be taken off in this manner with impunity, provided the surface of the wound be left smooth and

flush with the inner bark of the tree; for in a few years it will be completely closed up, and secured from injury, though an eschar may remain for several years longer. But if a large bough be thus severed, the wound is left so wide, that it requires, in most trees, a length of time to bark it over; during which time, the body of the tree having increased in size, the parts immediately round the wound become tinged, while the face of the wound itself is thrown back into a recess; and whenever this becomes deep enough to hold water, from that time the wound is rendered incurable. Nature has, at least, done her part; and whether or not, in this case, assistance may be given, by opening the lower lip of the wound, remains yet, it is probable, to be tried by experiment: until that be ascertained, or some other certain method of cure be known, it were the height of imprudence to risk the welfare of a tree on such hazardous treatment.

“Further, although a branch of considerable size may be taken off close to the body of the tree with safety, yet if the same branch be cut *a few inches* from it, the effect is not the same; for, in this case, the stump generally dies, consequently the cicatrization cannot take place until the stem of the tree has swelled over the stump, or the stump has rotted away to the stem; and either way, a mortification is the probable consequence. Even supposing the stump to live, either by means of some twig being left upon it, or from fresh shoots thrown out, the cicatrization in this case will be slow, depending entirely upon the feeble efforts of the bark of the stump; and before it can be accomplished, the tree itself may be in danger. But had the amputation been made at a distance from the stem, and immediately above a twig strong enough to draw up a supply of sap, and keep the stump alive with certainty, no risk would have been incurred, especially if the end of the
stump

stump had been left smooth with the slope on the under side, so that no water could hang, nor recess be formed.

“From what has been said, the following general rules, with respect to setting up low-headed trees, may, we humbly conceive, be drawn with safety: *Small boughs should be cut off close to the stem, but large ones at a distance from it, and above a lateral branch, large enough to keep the stump alive.* Thus, supposing the stem of a tree, in full growth, to be the size of a man's waist, a bough the thickness of his wrist may be taken off, with safety, near the stem; but one as thick as his thigh should be cut at the distance of two feet from it, at least, leaving a side-branch, at least an inch in diameter, with a top in proportion, and with air and head-room enough to keep it in a flourishing state. For this purpose, as well as for the general purpose of throwing light into the head, the standing boughs should be cleared from the lower branches, particularly such as grow in a sloping direction. In doing this, no great caution is required; for in taking *a bough from a bough*, let their sizes be what they may, little risk can be thereby incurred upon the *main body* of the tree.

“There is another general rule, with regard to pruning trees. The bough should be taken off either by the *upward stroke* of a sharp instrument, and, generally speaking, at *one blow*, or with a saw: in the latter case, it should previously be notched on the under side, to prevent its splitting off in the fall. If the bough to be taken off be heavy, the safest way is, first to cut it off a few inches from the stem, with an axe, and then to clear away the stump close and level with a saw, doing away the roughness left by the teeth of the same with a plane, or with a broad-mouthed chissel, or an axe, in order to prevent the wet from hanging in the wound. A saw for this purpose should be set

very wide, otherwise it will not make its way through green wood.

“The fittest opportunity for pruning, and setting up young timbers, as well as for taking down pollards and do-tard timbers, and clearing away other incumbrances, is when the hedge itself is felled; and it were well for landed individuals, as for the nation at large, if no hedge was suffered to be cut down, without the whole business of the hedge-row being at the same time properly executed.”—

Planting, and Rural Ornament, vol. i.

CHAPTER XI.

WASTES, AND THEIR IMPROVEMENT.

IT appears, in chapter I. of this Report, that the quantity of lands in this Riding lying waste, or in a state of nature, is 442,000 acres; which may be divided thus:

Capable of cultivation, or of being converted into pasture, or rabbit-warrens—

Detached moors, or commons,	-	18,435
Of the eastern moors, about	-	60,000
Of the western ditto	-	150,000

Total capable of cultivation, &c. 228,435

Capable of improvement by planting only—

Of the Eastern Moorlands,	-	136,625
Of the Western ditto,	-	76,940

Total, capable of improvement by planting, 213,565

The detached moors in the country, are generally depastured by all kinds of stock, each occupier turning on any kind, and in any proportion he likes. A few of the commons are stocked with rabbits, by the lord of the manor. The wastes are annually lessening in a considerable

erable degree, by inclosures authorized by acts of parliament.

The Eastern Moorlands are principally stocked with sheep, at the will of the farmer; and it has been calculated in the proportion of one sheep to ten acres.

The lower tracts of the Western Moorlands in general, with some of their higher parts, and the lower tracts of some of the Eastern, are stinted pastures; that is, the owners or occupiers have a right of pasturage for a certain number of cattle or sheep during the summer half year; but they who have that limited right in summer, have a right in winter to turn on what quantity of stock they like. These pastures are chiefly stocked with young cattle, horses, and such sheep as are intended to be sold off the same year.

The remainder of these moors is without stint, producing little but ling, and is stocked mostly with sheep.

The pasturage of these moors and pastures, while they are common, is in general monopolized by a few individuals, some of whom occupy but small farms, consequently their right upon the wastes ought to be in proportion to them*. These people, about Midsummer, go to the fairs in

* "The waste lands or commons of the Western Moorlands lie in general upon the summits, or higher parts of the mountains, and the intercommoning of stock grazing thereon, has from time immemorial been attended with feuds and undecided law-suits; in which the property of the weakest has been generally trampled upon by the strongest; convenience of situation or capital, has not unfrequently consolidated the commonage-property of whole townships into the hands of a few, or even a single individual. From the interested motives of such people, and their industrious propagation of the gross amount of some expensive divisions, the very people who are suffering most, and know that they suffer wrongfully, are terrified from claiming the proportion of their undoubted rights; and the ground is deprived of improvement.

"What effect the recent decision of a suit at law, in this district, may have amongst us, is not yet sufficiently tried. I will, however, take the liberty of giving a sketch of the trial, which, by request, the attorney for the plaintiff has

in the north, where they buy large flocks of Scotch wethers, to turn upon the commons, which they so effectually

has been so obliging as to send me, and which I hope you will think neither uninteresting or inapplicable to the subject in hand, or improper to be made generally known.

“Within the wapontake of Hang West, in the North Riding of Yorkshire, which comprizes Wensley-dale, Bishop-dale, and Cover-dale, there are various extensive open moors, or commons, belonging to, and enjoyed as appurtenant to lands in different manors, and which, though the greatest part is covered with heath, peat-mosses, &c. support, and, if not over-stocked, often keep in good condition, large quantities of sheep, beasts, horses, &c. chiefly of the Scotch, or North-country breed.

“For the most part, the soil of, and minerals within, these commons, belong exclusively to the lords of the manors in which they are situate; and every occupier of lands, and also of a house (if such house have any garth or curtilage annexed to it) within any such manor, has a right, in respect thereof, to turn cattle upon the common belonging to such manor, but not in such numbers as to surcharge or oppress the common.

“It has become a prevailing practice, for the occupiers of small farms (some of which occupiers frequently resided in distant townships, and took single fields, which were entitled to common-right) to stock their commons with great numbers of cattle, and without any regard to the smallness of the farms, in respect of which these cattle were turned on.

“This evil of surcharging had increased to an alarming degree, but will now, in a great measure, be crushed, by a late legal decision, of which the following is a statement: At the York Lent Assizes, 1795, an action was tried before judge HEATH and a respectable jury, which had been brought by JOHN BYWELL, who occupied a farm of about 150 acres, entitled to common-right in Thornton Rust, against THOMAS BAINES, who occupied a house and about five acres of land, entitled to common-right in the same township, for surcharging Thornton Rust common.

“On the trial it was proved, on the part of the plaintiff, that the inclosed lands entitled to common-right in that township, consisted of about 707 acres, and were worth, to be lett, about 750l. a year.

“That the common contained nearly 800 acres; which, *communibus annis*, was estimated, in depasturing, to be equal to 300 cattlegates, or the support of 1500 sheep, reckoning five sheep to one cattlegate.

“That the defendant only occupied a house and about five acres of land, which was not worth more, to be lett, than 8l. a year.

“That the defendant, in respect of his said house and land, had stocked the common with upwards of 120 sheep, between forty and fifty lambs, and two mares and foals: that if the rest of the occupiers of farms had stocked in the same proportion, there would have been upon the common above 11,000 sheep,

ally eat up, that regular breeding stocks of the country cannot be maintained to advantage, and therefore have greatly declined.

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above 4000 lambs, and above 700 mares and 700 foals; whereas 1500 sheep had been proved equal to the whole depasturage of the common.

"On the part of the defendant it was contended, that every occupier of lands having common-right, was entitled to stock the common with so many cattle as his said lands would maintain in winter; and the defendant proved by several stock-keepers, that the hay produced by his five acres of land, which were meadow, would amount to about 1200 stone weight, and that such hay added to the privilege (which every other farmer enjoyed) of keeping his cattle upon the common in winter, except in bad weather, was sufficient for the maintenance of all the defendant's stock during the winter season.

"The learned judge approved much of the action, and was clear in his opinion, 'that the defence set up was insufficient; that the surcharge had been fully proved; and that comparing the yearly value of each person's farm with the yearly value of all the farms, and then calculating the stock a common would fairly carry, was a proper rule for regulating the common-rights of the persons entitled.'—The jury, without hesitation, found a verdict for the plaintiff.

"Below those wastes or commons, and adjoining thereto, are the inclosed undivided town's pastures (no doubt formerly parts of those commons) and containing from 200 to 700 acres a piece, which are in general of a coarse benty quality, many of them inaccessible to the plough, being too steep and rocky, and which are regularly stinted, or summer stocked, with beasts, sheep, and horses, till Michaelmas; after which, they lie in common till Lady-Day. Some of those, as well as their commons adjoining, have been inclosed within these twenty years, by particular acts of parliament, and a few of the stinted pastures, by mutual consent.

"It appears sufficiently evident, that wherever the plough has been introduced in these divisions, with the course of husbandry most suitable thereto, great improvements and advantages have accrued to such good husbandmen. The general management has been, on the dry lands, by push-ploughing, or paring and burning; to a rape or turnip crop, succeeded by a couple of oat crops, two or three chaldrons of lime, of thirty-two Winchester bushels, to the acre; ploughed down with the first, sometimes with the ashes left upon the top, as much as may be with the second, and lay down with a good mixture of grass-seeds, well harrowed and rolled, and followed in due course of time with top dressings of lime, or, which answers in the most general and useful degree upon all our grass-lands here, lime mixed with the best drainage, or other waste soils, as a compost.

"The climate, amongst these high mountains, being ungenial to the growth of corn, on account of ripening, our principal attentions are pointed towards a complete

The principal obstacle to the improvement of the moors, is the great expence of obtaining acts of parliament for their inclosure, and the difficulty of settling with the tithe-owners and lords of the manors*.

An instance occurs in a township on the verge of the Eastern Moorlands, where two-thirds of the number of freeholders, and considerably more in value, desirous of an inclosure of their commons, amounting to about 800 acres of fine sward land, and about 12,000 acres of high moors, 4000 of which are capable of very great improvement, had agreed with the tithe-owners, and signed a petition to parliament; but the lord of the manor, who possessed very little other property there, being determined to oppose it, the business was dropped, from an apprehension of the expence and trouble attending an opposition in parliament.

An inclosure of open fields, amounting only to about 250 acres, in a township near to the above, was made a

complete grass husbandry, the country lying well for the sales of fattened cattle of the Highland breed, &c. for the great Lancashire markets of Liverpool, Manchester, &c.; and for this purpose, after draining the coarse, rushy, and boggy parts, from four to eight or ten chaldrons of lime, either from the kiln, or mixed in composts, are laid on an acre upon the sward, which, allowing the ground to be dry, has a never-failing and lasting effect, whatever season of the year it be administered."—*W. Sadler.*

* The great expence of acts of parliament for the division of commons, is a great obstacle to the improvement of moor-land; it not only throws an additional expence upon a kind of land that is to be made anew, but obliges many cottagers to dispose of the little they have. In cases of this kind, the Legislature ought to be particularly generous; for by assisting the interests of society, it would most firmly assist itself. Suppose a general act of parliament was passed, empowering a majority of the proprietors in number and value to divide any common or waste land, and to attach the same, when divided, to their respective freeholds; the majority, prior to any such division being made, to be strictly examined and approved of by three neighbouring justices of the peace at the next sessions, who should record such examination and approval in the country court.—*J. Smeddle.*

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few years since; the expence of obtaining the act alone, and without any opposition, cost the proprietors 370l*.

IMPROVEMENT OF WASTE LANDS.

THE process of improving the detached wastes which are scattered about in the cultivated parts of this district, being so little different from breaking up old pasture land, it is unnecessary to treat of it here, as the next chapter will comprize a detailed account of the improvement of such tracts; but that of the high moors cannot be more properly introduced than in this place.

Many attempts have been made to improve those moors by cultivation, some of which have miscarried, while others have succeeded extremely well.

The southern side of the Eastern Moorlands is well situated for lime, the basis of the improvement of those moors. The northern side is not equally fortunate in that respect, consequently improvements there must be much more expensive than on the south side.

Kildale, where the late Sir CHARLES TURNER commenced his improvements, is very disadvantageously situated, no lime being to be had nearer than the southern margin of the moors; it was nevertheless made use of in large quantities. The tract improved is extensive, probably not less than 1000 acres, exclusive of the plantations, the greatest part of which was originally as barren as any on the moors. Since his death, it has been much neglected, but plainly indicates the improvement which these

* The expence of this act of parliament, viz. 370l. perhaps would have improved the whole of the land inclosed; it would have allowed 1l. 7s. per acre for improvement.—J. Smeddle.

moors are capable of receiving. On one side of the wall, nothing is to be seen but ling; on the other side, a neglected pasture of ten or twelve years ley, producing plenty of coarse grass and very large rushes, here and there slightly interspersed with ling. Had this land been continued in a proper course of husbandry, it probably would have paid the occupier abundantly more than it can do in its present state. I was credibly informed that some of the fields, whilst the ley was fresh, produced crops of hay equal to those on land of far greater value*.

Large tracts of the Eastern Moorlands have been divided, and the most fertile parts inclosed, under acts of parliament obtained during the last few years; upon these, several improvements have been made.

The following is an account of one made upon Lockton moor, about six years since, the quantity about seventy acres, which would not let for more than 1s. per acre, before it was inclosed.

Forty-eight acres were pared and burnt, and sown with rape, except about an acre sown with rye; the produce

* The improvements upon Sir CHARLES TURNER'S moors, if they can be called improvements, are nothing more than a wanton waste of money, which could never answer any good purpose to himself, his family, or the public. To my certain knowledge, he never raised as much corn as he sowed; and the land, in a few years, will be as bad as ever: *Naturam expellas furcâ, licet usque recurret.*—E. Cleaver.

I am of the same opinion: there certainly was a wanton waste of money in making those improvements; but I apprehend it proceeded more from an injudicious expenditure, and aiming at too much, than from the nature of the subject on which it was employed. The growth of corn was made too much an object: this impoverished the land, and the expence of lime and carriage was too great for the quantity of corn which could be produced there to repay it. Economy as well as skill, is necessary in the improvement of such barren land, which can never repay great expences; and this must be incurred when corn is attempted to be grown. If green crops and grass, for the support of small cattle and sheep, had been the object, the land would have been much more improved, at an expence of perhaps not more than one-sixth part of what was laid out.—J. T.

about

about sixty quarters. The rye grew very strong, and in height not less than six feet, and was sold, while standing, for five guineas. The land was only once ploughed, otherwise the crop of rape would probably have been much better. One hundred and twenty chaldrons (each thirty-two bushels) of lime were ploughed into the field; which, for want of more frequent ploughing, probably was not of the service it otherwise might have been. Part of the land was afterwards sown down with oats and seeds; the former of which afforded but a moderate crop, the latter a very good one, and has since produced two loads, 120 stones each, per acre. The seeds sown were ryegrass, rib-grass, white clover, and trefoil; of these, the first succeeded amazingly, the others not so well; potatoes thrived very well; turnips not equal to them. A farmhouse has been built upon it, which now, along with five acres more of the same kind of land, is lett on lease, at 30*l.* per annum.

The soil consisted, in general, of benty peat, upon red-grit stone, with a mixture of clay upon limestone; this last is, in some places, at a considerable depth, in others, sufficiently near the surface for lime to be burnt upon the premises.

But the greatest and most profitable improvement I have met with, is one made by RICHARD SIMPSON, at Sain-toft, upon Pickering moors, of which he has given me a circumstantial account in the following letter:

“ SIR,

“ According to your request, when here last week, I sit down to give you an account of the method I have pursued, to bring into its present state of cultivation the farm I now occupy, and which was allotted to me on the inclosure of the commons of Pickering and Newton.

Newton. If you should think this account, or any part of it, worth noticing in your Report, as being likely to be of use to other owners, that have land of similar description in its wild uncultivated state, it is much at your service*.

“ The allotment contained 315 acres, and was situated on the northern verge of those limestone heights which border the valley in an east and west direction for above thirty miles, from near Helmsley to Scarborough. To the north of this tract of limestone, which, in most places, rises with a gentle slope from the plain of the vale, and bears a breadth of two or three miles, lies the wild, and chiefly uncultivated, tract called Black-moor, which cannot contain less than 300 square miles, not one-tenth part of which is in a state of cultivation. The soil of the farm might be classed thus :

“ *Class I.*—One hundred acres pretty strong loam, of a moderate depth, upon limestone.

“ *Class II.*—Seventy acres of a deep sandy soil, with more or less of a red-stone earth intermixed. These two classes were over-run with heath, or ling, in patches, with brakens (fern), and a tough mossy herbage intermixed.

“ *Class III.*—One hundred and forty-five acres of a black moory soil, covered with an uniform coat of heath, with a few brakens, and here and there a few tufts of bent grass intermixed.

“ But although the upper soil of this last class was nearly alike, consisting of half-putrified heath, intermixed, like all the upper soil of the dry part of the moors, with black and grey gritty (chiefly silecious) sand, and had occasionally, while common, been pared for turf for fuel, yet

* This land will more than answer the expence of the improvement; it is sound land, and well managed.—*E. Cleaver.*

the sub-soil, in different parts, varied materially; and on that difference of sub-soil I founded any hopes of improvement, and I was not deceived in the event.

“About 100 acres of this (class III.), although the upper soil was uniformly black, and in some places two, in others, from that to six inches thick, yet the soil beneath had every appearance of what, had it been on the surface, I should have called a light sandy loam, intermixed with a freestone-gravel, and had undoubtedly once formed the upper soil, before the ling or heath had encroached upon and destroyed the other grasses, which in all probability existed there: this is a process which is going on every day, and has undoubtedly taken place on most of the borders of the moors, to a considerable breadth; for ling will thrive on almost any soil, and remarkably well on a light sandy loam; and being a perennial, and, I may add, a permanent plant, retaining its stem and branches all winter, and its stems generally rising above the surface of snows, its seeds are carried thereon by the winds to considerable distances, where being lodged, on the melting of the snows, and vegetating, the ling produced gradually destroys the more tender grasses growing in its shade: add to this, the soil produced by the gradual decay of the ling, becomes continually more fit for its propagation, and more unfit for the produce of almost every other species of vegetables.

“The remaining forty-five or fifty acres had an upper soil, similar to the last described, and a sub-soil of a hard-cemented grey sand, of a most unpromising appearance, as impenetrable to water as the closest grained stone, and almost as hard; and, what was worse, this stratum was too thick for the plough to penetrate through it. This is the worst species of land I have seen upon any part of the moors; for the produce of any kind of corn, even rye (except in patches), going off before it shoots into ear, although

remarkably healthy and vigorous until the period immediately preceding its shooting, which, I suppose, must be owing to its then sending forth roots to derive nutriment, from a greater depth, and meeting with this sub-soil totally unfit to afford that nutriment, it withers and dies. This happens alike in a wet or a dry season; and yet even this land, where lime may be had at a moderate rate, may be appropriated to some purposes with benefit to the proprietor; for when pared and burnt, and well limed, both white clover and rye-grass thrive on it remarkably well.

“I have been thus particular, because being well convinced that there are some thousands of acres on the borders of Black-moor, and in patches adjoining several of the small cultivated vallies that run through it, of a soil and sub-soil similar to the hundred acres of class III. above described; and as this land, where lime can be had at any reasonable price (say from 3d. to 6d. per bushel), will pay very well for cultivation, being most of it fit for the produce of either rye, turnips, or oats, at the first; and what is not so, being sown with rye, and laid down two or three years with grass-seeds, will then produce turnips and oats; and on all of it, white clover and rye-grass will succeed remarkably well, particularly the former; I think, if the owners of such lands could be induced, by a more minute examination of the soil, and more particularly of the sub-soil, to bring them into a state of cultivation, it would not only be a benefit to themselves, but of public utility; for in their present state, they are worth a mere nothing, not 6d. an acre.

“Entering on the above farm in the year 1787, it was evident that the nature of the mossy herbage, intermixed with patches of ling, on even the best of the limestone and sandy soils, indicated paring thin, and burning, as the best husbandry; so indeed I thought, and so in general acted; but

but being a young farmer, and having frequently heard it asserted, 'that to burn soil was to destroy it,' I ploughed out ten acres of the best herbage, and the most free from ling, on the limestone soil, without paring; I may add, that I had sufficient cause to repent it, for I have not even had one middling crop from it since; and although laid down with seeds, they have by no means so good an appearance as those sown the same year on similar soils, although I have expended as much lime and manure on this as on any part of the farm.

"It appeared to me likewise, that paring and burning the black moory soil on a good sub-soil, would answer a doubly good purpose; for by paring tolerably thick and burning, I not only changed the worst and least putrified part of the soil into good ashes, rich in alkaline salts, but, by so doing, I brought the sub-soil within the reach of the plough, and could at pleasure mix it with the remaining black soil, and expose it to the influence of the air.

"I kept likewise another object in view, and that was, to begin with a larger proportion of the best and most productive land, and a smaller of the worst, that, by so doing, it might not only pay for its own cultivation and improvement as I proceeded, but that I might get into a better stock of manure. The first year, I pared and burnt 120 acres, viz. eighty of the classes I. and II. and forty of class III. On most of this, I laid three chaldrons (of thirty-two bushels each) of lime on each acre, but on part of it only two: I was induced to do this, because, although our present chemical knowledge of the properties and component principles of lime is very confined, and we are utterly ignorant of its mode of acting as a manure, yet it is known that lime and alkaline ashes mutually assist each others action, as manures, in a very eminent degree, and that if lime is intended to be used at all in a succession of crops,

crops, it is always best to lay it on with the ashes. On such part of these eighty acres that were got burnt, &c. previous to the beginning of May (about fourteen acres), I sowed oats, with once ploughing, and had a tolerable crop, viz. near seven quarters per acre. I sowed forty acres with rape, with once ploughing—produce, in 1788, 160 quarters, four quarters per acre: the remaining twenty-six acres I sowed with turnips, ploughing once, and had a very good crop, which was eaten on the land with sheep, and was succeeded in 1788 with oats, above seven quarters per acre.

“ The ten acres I had this year ploughed out without paring and burning, were a similar soil to the above eighty acres, most of it class I. I sowed this with grey peas—produce, not a quarter per acre.

“ The forty acres of class III. I pared thick, burnt, and laid on about three chaldrons of lime per acre. Such part of this as had the best sub-soil, I ploughed in May, and harrowed and cross-ploughed the latter end of June, and sowed with turnips, which being a tolerably good half crop, were eaten upon the land with sheep, and succeeded in 1788 by a crop of oats of from five to six quarters, per acre. Being in want of herbage for sheep, I sowed down this field, about fourteen acres, with seeds, along with the oats, viz. white clover, about five pounds per acre, and the common hay-seeds of the country, about five bushels per acre: they came remarkably well; and the year following, this field was almost an entire sheet of white clover. One thing in this field deserves remark: about an acre of it, of as good a soil as any of the rest, was not limed; the consequence of which was, that although not perceptible in the turnip crop, it was very much so in the oats, and still more in the grass-seeds; very little white clover was to be seen: and now, although the other parts of the
o field

field is a tolerably good herbage, with a few thinly-scattered small branches of ling coming amongst it (owing, I suppose, to its not having been long enough in tillage to destroy all the roots of this hardy plant), yet that part of the field unplowed, is nearly destitute of herbage, and covered with heath.

“ About sixteen acres, other part of this forty, being of a somewhat inferior sub-soil, and the black moory soil of a greater depth, I sowed with turnips, with once ploughing. These were a very poor crop, the bottoms in general not larger than the common hedge-crab; they were eat with sheep in the autumn, and the land sown with rye, which produced about two quarters per acre. Grass-seeds were sown amongst the rye, in the spring of 1788, in the proportions last mentioned: they came remarkably well; and the herbage, the two following years, was almost entirely composed of white clover.

“ The remaining ten acres was of the cemented sandy sub-soil above described. A little turnip-seed was likewise thrown upon it, after once ploughing, which produced a few dwarf tops, but no roots that were eatable. These tops, or leaves, were eat with sheep in the autumn, and the land then sown with rye, and with grass-seeds in the spring following, in the same quantities as the last mentioned. Produce of rye, six to eight bushels per acre, and these of inferior quality. The grass-seeds came remarkably well; and even on this soil the white clover, for the first two years, was in far greater quantity than all the other grasses put together. The herbage of these forty acres, as you would observe when here, being adjacent to the farm-stead, is yet of tolerable quality; but here and there is a sprig of young heath. I intend, therefore, to plough it out the next spring, and re-lay it with grass-seeds, after another succession of crops.

“ I pro-

"I proceeded in this manner in 1788, 1789, 1790, and 1791, in which year I had gone over all my farm, except a few acres situated on hill sides, the declivities of which were too steep for ploughing. I constantly pared, burnt, and limed, as above, but varied occasionally the crops. What, after the experience I have had, I would recommend as the best course for a black moory soil, is to pare, burn, and lime, plough twice, and sow rye in the autumn of the first year; to fallow for turnips for the next crop. If a little manure can be had for the fallow, there is a greater probability of the turnips succeeding; and if manure is not to be had, the lime and ashes, with the melioration of the air, the soil has already received, will render it much fitter for a crop of turnips than it was when newly opened. On these dry light moory soils, the turnips should be constantly eaten upon the land with sheep, and may be succeeded with oats or rye, according to the better or worse quality of the sub-soil. With this first crop after turnips, the land ought to be sown with seeds, in which white clover and rye-grass ought to be in the greatest proportion: in grass, it should lay three, four, or five years, as pasture-ground; when on being ploughed out again for another succession of crops, as,

" Oats,	} or, {	" Oats,
" Turnips,		" Turnips,
" Oats, with grass-seeds,		" Rye, with grass-seeds;

and on the worst sub-soil, grey peas or rye, then turnips, to be followed with rye with grass-seeds—it will be generally found, that the soil will be in a much fitter state for the production of these crops, than in the first succession, always remembering to lime for the turnip crop, and, if to be had, to lay on a little manure likewise.

“As no more than two crops ought to be taken for one fallow on any light upland-soil, perhaps the best mode of opening out-lands of the description of class I. and II. is to pare, burn, and lay on three or four chaldrons of lime per acre with the ashes, to plough twice for turnips, to eat them on the land with sheep, and to follow with oats, &c.; and after one or two succession of crops, the land ought to be laid down with grass-seeds, always remembering, whatever the succession, to lay down the first year after a fallow, when, after a few years rest, it may be ploughed out again with advantage.

“As the lands of class I. and II. and the better sorts of class III. are brought to an immediate state of improvement, and the profits arising therefrom are evident from the bare inspection of the crops, it will be only necessary to compare the expence and improvement on the worst species of land in class III.

	£.	s.	d.
“ Paring and burning one acre, and spreading the ashes, - - -	0	18	0
“ Three chaldrons of lime, at 7s. - - -	1	1	0
“ Leading and spreading ditto, - - -	0	6	0
“ Six ploughings for a succession of crops, as rye, turnips, rye, - - -	1	10	0
“ Six harrowings for ditto, - - -	0	12	0
“ Rye-seed and turnip-seed, - - -	0	16	0
“ White clover and grass-seeds, - - -	0	10	0
“ Harvesting two crops of rye, - - -	0	10	0
	<u>£. 6</u>	<u>3</u>	<u>0</u>

“ First

" First crop of rye, eight bushels; second crop, twelve bushels, at 3s. 9d. per bushel, 3 15 9

" Eatage of the turnip crop, about 0 5 0
 £.4 0 0

So that there will be a loss of 2l. 3s. per acre; but then it is to be considered, that the herbage of the first three years is worth more than 10s. per annum, and that the soil, by the operation of the lime, is in a continual state of improvement, and has every appearance of being permanently worth 5s. per acre to farm. I own, I should not have attempted to cultivate land of the last description, had it not unavoidably fallen within the ring-fence of the farm; and being already inclosed, there was a greater probability of its paying for the improvement.

" The great error into which many, in my recollection, have fallen, in opening out-land for the first time, is the *ploughing out the tough mossy sward without paring and burning**; the consequence is, that for the first four or five years, there is an almost total failure of crop, and, of course, a want of manure for the next succession. This is done under the mistaken idea that, by burning, so much of the soil is almost totally dissipated and lost. Now, although we are in want of experiments to make it evident, what greater proportion of vegetable matter is dissipated in suffering combustion with a slow fire, and in contact with earthly matter, than would be dissipated in the same under-

* Mr. SIMPSON's observation perfectly agrees with mine: the best method of making this kind of tilth valuable, is to burn it.—J. Smeddle.

Mr. SIMPSON is certainly right; paring and burning can never be attended with any bad consequences upon such lands as these. A landlord should never object, under such circumstances.—W. M.

going putrefaction; yet we know, that as all vegetable soils contain more or less of calcareous earth, in its mild state, the subjecting this to the action of fire, must increase its activity as a manure, by bringing it nearer to the state of quick-lime, and that the silecious and argillacious parts of the soil are not dissipated in burning. Modern chemistry will throw much light on this subject*.

"I am far from asserting, that a soil will not become thinner by repeated burnings; but I am of opinion, that it will not become so in the degree generally imagined; and I am an advocate for only the first paring and burning of very old sward, or heath. But this letter is already become much longer than I first intended; you will therefore give me leave to subscribe myself†

"Your most obedient servant,

"RICHARD SIMPSON,

"*Saintoft-Grange, near Pickering,*

"*20th November, 1793.*"

The

* Paring and burning have very different effects, according to surface and soil: it is an expensive operation, and can only be repaid by one or two succeeding good crops. In good soils, no doubt of the propriety; but where ling abounds on a thin soil, with greasy pebbles, I am confident, as much may be done by burning the ling, ploughing, and letting it lie six or twelve months, then harrowing, liming, and taking two or three turnip crops, grass-seeds, and no corn; this should be done by the land-owner; no tenant will be at the expence. When land falls into their hands, it is exhausted by crops of grain, and then the land is condemned, as having been good for nothing; whereas, these lands are grateful, when properly laid to grass, and will, by sheep grazing, arrive, at a future time, to afford profit, and some improvement, under the plough.—*Anonymus.*

† Much depends on the situation of the improver of this land: it must be supposed he has a farm of old land, and this new falls by a division of common. In this case, the rent of the new is no consideration: he can, in September or October, easily spare his ploughs, when he feels little expence in ploughing fifty acres; if it lies even twelve months, where is his loss? It is gaining from the seasons. Cross-plough and harrow well; the spring following, plough, lime at the

The following mode of improvement has been practised on the moors which were inclosed a few years since, situated on the east side of Rosedale and Hartofdale :

The land being ploughed, is allowed to lie in that state one year ; before the expiration of which, it is limed and well ploughed, and then sown with rye, if on a gravelly, and wheat, if on a clay bottom. This mode of management is there thought to be more advantageous than any other.

Some improvements have been made upon the Western Moorlands, that have answered very well, every part of those moors being well situated for obtaining lime of the first quality : this renders improvements easier and more beneficial, than on the generality of the Eastern.

WILLIAM HEAD, of Gales, had an allotment of 300 acres, on the inclosure of a part of those moorlands ; the following are the particulars of his improvements :

About twenty years since, most of the commons, I mean the high black mountains in our neighbourhood, were divided by act of parliament : an allotment, of about 300

the rate of two or three chaldrons per acre, not more ; turnip, eat with sheep, then break the tough sod ; turnip again, without lime : your sod is now acting in part as manure. In the spring, use the same quantity of lime, and sow grass-seeds. Here is no advantage in having oats ; the land is hurt by it. If paring such land was abolished, it would prevent such crops. Ploughing up is slow ; but the land is meliorating, and the sod adds to the soil ; and it will be found, in future, grass. I have a proof of this management on a turfy thin soil, within a few inches of sandy sub-strata : had this been followed up with oats, I should have got into the sand. — *Anonymous.*

Anonymous seems to conclude, that if land be pared and burnt, corn must be grown thereon. This is not a necessary consequence. If I am going to improve any of these moorlands, the first considerations are, what do I want to obtain ? — Improvement of the land. — By what means can I best obtain that ? — By producing the largest quantity of food for sheep. — How is this to be obtained ? — By paring and burning, and the use of lime ; and by those means, a larger crop of either turnips or rape may be obtained, than by lime without paring and burning ; and the better crop of turnips that is obtained the first year, the better the second year ; and the better the crops of turnips are, the better will the grass be afterwards. — *J. T.*

acres, fell to my share*, which, when inclosed by a ring-fence, was not worth 10l. a year. I sub-divided this allotment into fields of about fifteen acres, and undertook the cultivation myself; and having now improved more than 200 acres of it, I have lett the whole at an easy rent, for 120l. a year, clear, to a good tenant. Its ancient occupiers were, plenty of moor-game, and, perhaps, 100 Scotch sheep, worth about 10s. a piece after being there two years. Of late years, it has well maintained about 250 long-woolled sheep, forty Scotch bullocks, and ten horses; the ewes, with their lambs, and the year-old sheep, went to that high situation in April; the year-old sheep were brought off at Martinmas, and put to turnips; the ewes and lambs continued there till near January, when they were brought into a more sheltered situation, and remained there till April following, and then returned, with their increase, to the cultivated mountains. In March, the wethers, when only once shorn, were sold for about 44s. a piece; the forty Scotch bullocks, on an average, paid me for a year's keeping there, about 50s. a piece; the horses, in the breed of which our country, I think, shews more taste than judgment, frequently left me nothing.

The produce of this tract, when I began with it, was ling, the soil chiefly a black peat-earth, six or eight inches deep; this soil, if it had more substance, would not be unfertile. I burnt the ling, and had no ashes. I then ploughed, and harrowed in about five chaldrons of lime per acre, with turnip-seed †; had turnips, worth to me 40s. per acre, which

* Three hundred acres of this moorland would be a sufficient quantity for three tenants, who might, in order to relieve their home-pastures, send up their holding-stock, viz. young horses, young cattle, and perhaps a few sheep, in the month of May, and allow them to continue till the latter end of August.
—J. Smeddle.

† Suppose moorland was ploughed once in autumn, and, in the spring following, was ploughed twice more, harrowing in five chaldrons of lime per acre,

which were eaten where they grew, with sheep. In June, the following year, I harrowed in about five chaldrons more, and sowed grass-seeds; and to secure a succession of pasture grasses during the whole summer, I mixed ryegrass, which came up first, with red clover and trefoil; the second, white clover; the third, and last of all, feather-grass*, hardy on all soils, and by no means unprofitable, if properly managed. Limestone being on the spot, and coals cheap, the lime stood me in no more than 5s. a chaldron, of thirty-two bushels. Lime is the great instrument for binding, sweetening, and invigorating the soils in the

acre, with turnip-seed; these to be eaten where they grew, with sheep; in the spring following, plough it three times, harrowing in five chaldrons more lime per acre, with turnip-seed; these also to be eaten where they grew, with sheep; in the spring following, plough it once, and harrow in plenty of grass-seeds.

A crop of oats, or any other kind of corn, requires more nourishment than this kind of land can afford to give it.—*J. Smeddle.*

I cannot think this land was ploughed long enough to destroy the ling; more ploughing and less lime, might have done better for succeeding grass; I should have given it another turnip-crop, at least. I have an excellent pasture, land not much better than the above, first pared and burnt, had a good rape where a clayey bottom, very little where a black earth. I should have said, I limed also; but a heavy rain, I believe, washed both the ashes and the lime away. I gave it a summer fallow, limed, not more than five chaldrons per acre, both times together; had rape and grass-seeds sown down; I had it mown—a heavy load of grass. My black land beat the clay, as to rape. The year following, a great crop of grass; since, an excellent sheep pasture.

N. B. The rape was gathered, by women, from the grass. Here I had two crops of rape, no oats; and the grass-seeds, sown in August with the rape, thrived, and paid altogether, beyond any other plan I have seen followed. The black earth produces the most grass.—*Anonymous.*

The high moorlands ought to be improved for pasture; if it would give you a crop of corn, the harvesting of it would be extremely hazardous; and as it will not effectually fatten stock, the tenant, who has no other ground of a superior quality, is obliged to sell at a bad market. This kind of land pays best, when depastured with holding stock in the summer months. By decreasing the quantity of pasture land at home, by the summer assistance of the high lands, you greatly increase the quantity of arable.—*J. Smeddle.*

* *Holcus lanatus*, or duffield-grass.

situ-

situations alluded to, which, on trial, I found would not produce corn of any kind.

A very capital improvement was made about twenty years since, under the direction of WILLIAM DINSDALE, on a large tract of the moors betwixt Hawkswell and Richmond; the soil a black turf earth.

The ling being first burnt off, the land was ploughed in summer, and cross-ploughed in autumn. In spring following, it was limed, and after one more ploughing, sown with turnips, which were eaten off with sheep: these were succeeded by oats, they, by a whole year's fallow; after which, turnips were again sown, which being eaten with sheep, were succeeded by oats and grass-seeds: this new ley continued to be pastured with sheep for two years, and was then ploughed out again for oats.

A gold medal of the Society for the Encouragement of Arts, Manufactures, and Commerce, was granted for this improvement; for a more particular account of which, see the Transactions of that Society, vol. ii. 1784†.

Since the above improvement was made, several hundred acres of the same tract of moorland have been inclosed and improved in a similar manner ||.

It

* The man who improves moorland, should not attempt to rob it of its newly-acquired capital, by laying on such a crop as would extract the very soul of his improvement; he should sink his improvement, and be satisfied with a fair interest.—*J. Smeddle.*

One disadvantage in not paring and burning, you have a tough sod either to lead off or burn (even after you have had some crops, particularly turnip crops), at some expence.

† Mr. DINSDALE's improvement is well worthy of inspection. You have a poor short ling on a pebbly bed of stone, with turfy soil, if it may deserve the name of soil, on one side; on the improvement side, you have what pleases the eye; and, by Mr. DINSDALE, I find it has long since reimbursed his employer. I have seen excellent crops; but his plantations are greatly contributing to the whole.—*Anonymous.*

|| A gentleman of Bowes tried, with good success, a method of improving the pasturage of barren moorland. Impressed with the idea, that the poverty
of

It appears from the foregoing experiments, that many parts of those vast tracts of moors are capable of improvement; but if the higher and more barren parts were planted, their shelter would considerably aid the improvements of the remainder.

Many parts of the Western Moorlands might be advantageously stocked with rabbits, after the vegetable produce had been improved by the use of lime.

The primary object of the cultivation of these moors should not be corn, but food for sheep; the former might

of the soil would not repay the expence of cultivating by the plough, he pared and burnt the ling and bent, and mixed the ashes with an equal quantity of lime; these, spread upon the land, he harrowed sufficiently to be mixed with the soil nearest the surface. Upon the land thus prepared, were sown hay-seeds, clover, rib-grass, &c.; these being again harrowed, the produce was equal to his expectation, and afforded useful and good herbage for some years.

—*W. Dinsdale.*

In the cultivation of waste lands, after inclosure, the tenant should be cautiously restricted to the number of crops to be taken: the wonderful fertility of virgin earth, even in seemingly barren soils, is a strong temptation to the farmer to continue his land in tillage, without even a fallow; by which means, the land becomes almost incorrigibly sterile for a great number of years.—

Cler. Ebor.

Should a general inclosure bill take place, as every land-owner must indisputably wish, and wherein a majority of property, or other adjudged value, could decide upon a division in each township, there is little doubt, but that great exertions would follow, considering how much we abound with every convenience for draining, liming, and not improbably, marling; all of which are incentives to an emulation, which the consequences of ascertained property would stimulate into practice. These, with the addition of good stone fences, and the beneficial effects of planting (which two last, amongst other judicious improvements, have already been very spiritedly introduced by a resident gentleman of considerable property, into the very centre of the district), besides being productive of a much-wanted habitual industry, would shelter our cattle, and soften our climate into a refreshing temperature, and habitable state, from the tops of our mountains to the bottoms of our vallies.

Many of our high commons would by no means bear a sub-division: it would alone be reciprocally profitable for the limits or bounds of each township to be ascertained, by sufficient powers contained in the said general act, which would be naturally succeeded by a regular stocking, and both be a relief and fair convenience to every occupier therein; instead of the late partial and overbearing practices before mentioned, which would then be done away, and every freeholder enjoy his own due right and privilege.—*W. Sadler.*

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sometimes be taken without disadvantage; but two green crops, exclusive of temporary leys, for two or three years, ought to intervene between each crop of corn. By this mode of culture, and the use of large quantities of lime, the land would be in a constant state of improvement, and would be found much more profitable, than when kept exhausted by repeated crops of corn.

The stock of the improved lands should be principally sheep, as the growth of winter food for them, and their consumption of it upon the ground, are the most certain and expeditious means of improving them.

CHAPTER XII.

IMPROVEMENTS.

SECT. I.—DRAINING.

IN a country of so various a surface as is that of the district under survey, there is ample room for draining of every description. It is here, as elsewhere, found, that of all operations in husbandry, none pays equal interest for the capital bestowed upon it; none has a greater or more immediate effect; none so surely repays both landlord and tenant. Sufficient attention, however, has not yet been here paid to the great features of this improvement; neither to that of draining off the flood-waters, and excluding them from the lands, by opening out and clearing the rivers, and by judicious embankments; or of carrying off the rain, or surface-waters and upper springs, by means of under-drains.

It has been already noticed in chapter I. sect. IV. that 17,500 acres, lying on the banks of the Rye and Derwent, in the North and East Ridings of this county, are either greatly damaged, or rendered entirely useless, by the overflowings of those rivers. The drainage of this tract has been several times in agitation; but a contrariety of interests, an injudicious mode of setting about the business,

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or the want of the active abilities of some individual, has hitherto put a stop to it; and the undertaking seems at present dormant. Upon the Rye, and its branches, various embankments have been made, but never on a judicious or scientific plan; too contracted a space for the water has always been left, by which its force has been augmented, and weak banks rendered still less able to resist its violence; and no attention has ever been paid to straightening the course, and clearing out the bed of the stream. For want of similar attention, considerable tracts of land are injured on other rivers; but in no instance to be compared with the damage suffered on the Rye and the Derwent.

Bogs or mosses exist only on the moorlands, and chiefly on the highest parts of them. No attempts are likely to be made at draining these, nor can be made, till these wastes are held in severalty, which can only be done through acts of parliament; but acts of parliament are attended with too much expence for such purposes; and it is doubtful whether many of these would pay for the expence of improvement: they are too elevated to bear grain, and grass might not repay the cultivators.

Under-draining has only been introduced of late years, and it is not yet so general as it ought to be, though the practice is rather increasing: in the northern part of the vale of York, and in Ryedale, it is chiefly to be met with, though instances occur in many other parts of the Riding. Without doubt, an improvement so highly beneficial would become general, if, where the land is lett at will, the landlord would join with the tenant in the expence, or agree, that, in case the tenant should quit the farm within stated periods, proportionate allowances should be made to him. Where the tenant holds his farm by an uncertain tenure, sufficient encouragements are frequently not held out

out in other ways, to induce him to attempt this or other expensive improvements*.

The mode in practice in under-draining, is to begin with a cut along the higher side of the verge of the springy ground, of a sufficient depth to catch the spring, and lower down where necessary, to carry cross-cuts leading into a main drain, which conveys the collected waters into an open ditch, shore, or river. Of all materials for filling drains, cobbles (pebble stones), are the best calculated for the purpose, on account of their inclination to be globular, and consequently to leave greater interstices than if of any other shape. When they are used, the drains, which are, at the bottom, of various breadths, from four to nine inches, are filled with them, to the depth of about half a yard, or more, if they are plentiful, according to the depth of the drain. Upon the cobbles, a covering of straw is laid, and over the last the turf, if in a grass-field: these together, prevent the loose earth from falling among the stones, and injuring the course for the water. If no turf be produced in making the drains, it must either be procured from a distance, or a greater quantity of straw made use of. And lastly, the remaining and upper part of the cut is levelled with the earth that came out of it. When stones not possessing the globular shape of the above, or common quarry-stones, are had recourse to, it is usual to make a small conduit, or tunnel, along the bottom of the drain, to convey the water, then to fill it to a certain height with loose

* The landlord ought to be at the whole expence of draining, when the farm is held at will, and the farmer pay the landlord, for every pound he expends in draining, one shilling yearly, during the time he holds the estate.—*J. Smedley.*

Hollow-draining is every where most advisable; and where materials can be had, it may be completed at an average price of 2s. 4d. per rood, of seven yards.—*Cler. Ebor.*

broken stones, and finish off as before*, but such tunnels are always well avoided, as it affords a retreat for rats, moles, and other vermin, which injure the drain, and by burrowing, fill up the passage designed for the water.

Wood is not often applied to the purpose of draining, because, though in many places plentiful, stone is in general more so; and though wood will perform its office equally well at first, drains made with it are more liable to decay, and if taken up to repair, cannot be renewed with the old materials; a disadvantage not found where stone is used.

In a few situations, where neither of the above materials can be easily procured, hollow drains are made in the following manner: suppose a drain to be cut $1\frac{1}{2}$ feet wide at top, and three feet deep; at the depth of two feet, it is contracted to one foot; at the bottom of this, another cut is made, about nine inches wide, which tapers to the bottom, and consequently leaves a shoulder on each side, of the breadth of one inch and an half, and at the depth of two feet from the surface; the top sod is forced in with the grass-side downwards, and being half a foot wider than the vacancy intended to receive it, is necessarily rammed down very hard, and thus becomes capable of supporting the earth with which the remainder of the drain is filled.

* Hollow bricks are very useful in draining, and ought to be made duty free. All improvements of this sort, ought to be done by the tenant, who can at a vacant time execute them at half the expence it would cost the landlord, the land being lett accordingly. So numerous and great are the advantages to be derived from hollow-draining, that they cannot well be described within the compass of this Report, nor can the various modes practised.

Black thorns are excellent, when cut in proper season, and laid in deep drains. Drains upon the late Sir CHARLES COPE's estate, in Huntingdonshire, made by my father, in 1738, run well to this day. Ling, or heath, tied up in faggots, is also very durable.—*E. Cleaver.*

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This drain, where the soil is of a tenacious quality, and the field remains in grass, will last a great number of years; but there is a danger, when ploughing, of the horse's feet breaking into the drain, and stopping the passage for the water.

Several other modes of under-drainings practised in other parts of the kingdom, are either here unknown, or recourse is never had to them, on account of the general abundance of stone, well adapted to the purpose.

A considerable degree of attention is paid, in most parts of the North Riding, to gripping (that is, open surface-draining) the ploughed land, in order to carry off the surface-water; but a general neglect of the grass-land prevails in this respect, the furrows of which are often filled with water, which is suffered to remain till imbibed by the earth, or evaporated by the sun and winds.

SECT. II.—PARING AND BURNING.

THE opinions, both of landlord and tenant, respecting paring and burning, are very various and contradictory in this country, as well as in most other parts of the kingdom; some asserting, that it is a most profitable improvement on old coarse grass-land, and injurious in no instance; while others, with equal confidence, maintain the opinion, that the practice is most destructive in every instance. In all probability, both parties may be partially right, the merit or demerit depending on the management and application; and the ultimate injury or benefit to the land, *on the course of crops, and the mode of cultivation pursued.* Where paring and burning induces the farmer to crop
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without mercy, as is too frequently witnessed, there it is most destructive, ages being required to renovate the fertility of exhausted ground; but the same would be required, were a system, equally destructive, pursued on any other land; consequently the blame is not in the practice, but in the avarice of the cultivator. Where the husbandry that succeeds paring and burning is judicious, no mode of improvement can be compared with it; *for it is certain to produce great crops of turnips and grain, and these are certain means of future fertility, in the hands of a judicious farmer.* Frequent, however, as this husbandry is, and widely as it is diffused through the kingdom, the principles of it are little understood any where; and attentive experiments have every where been wanting, sufficiently varied, to ascertain the amount of its merit*.

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* “Whoever will attend to the quantity of earth in the sods, and the quantity of ashes produced from them, will lose his fears about the soil being lessened by this operation.

“Supposing the sod to be an inch thick, not more than one-fourth part of it perhaps is soil; and this, so far from being reduced in bulk to an alarming degree, is perhaps increased in size by the action of the fire, which, by leaving it in an open porous state, renders it more bulky than the same soil, shook from the sods, and reduced to a perfect state of dryness only, would probably have been.

“I will not contend for the increase, nor will I at present admit that the soil is lessened by the operation. Different soils are acted upon in different ways, by fire. Clay burns to hard cinders, of the nature of brick, remaining in the soil unaltered by time, while the cinders of lighter soils are more perishable.

“These effects of sod-burning do not appear to have been attended to: its use, in reducing tough sward, strikes every one; and its effect as a manure, in the cases in which it is usually applied, is here clearly understood by those who are best acquainted with its manner of acting.

“But its effect in improving the contexture of strong cohesive soils, has escaped general notice. Yet how could art devise an ingredient more likely to give openness and freedom to a close-textured soil, than rough porous unperishable ashes?—a material of improvement which the soil itself supplies, free of cost. The immediate acquisition of manure, repays the expence of the operation; the more permanent improvement of the contexture of the soil, is of course obtained without expence.

“Viewed

This mode of breaking up coarse rough turf, is practised in every part of the North Riding, but more frequently on the east side than on the west: it is performed with a "paring spade," which a man thrusts forward with his thighs, by the exertion of his loins, and which cuts the sods about one foot in breadth, and three feet in length: it is generally thought best to pare as thin as the nature of the turf will allow, so as that it may be clean cut up; but a rough spongy surface, admits and requires a thicker sod than where the herbage is finer. If the weather is so unsettled after the paring, that the sods do not get dry when lying upon the ground, women and children are employed to set them on edge, to expedite their drying; after which they are put into heaps, about the size of a small hay-cock, care being taken to lay them light and open within, but to cover close on the outside, to retain the heat, and prevent too rapid combustion.

Paring and burning is generally thought not to answer so well upon strong clay soils, as upon such as are less tenacious.

WILLIAM COOPLAND, of Aisenby, near Topcliffe, has communicated to me the following account of an experiment he made in paring and burning:

"From an accurate experiment I made some years since, I am confident, that the best method of breaking up grass-land which has a tough, coarse turf, is to plough it, for the first time, just before winter sets in, to cross-plough it in the spring, and, during the course of summer, give it repeated ploughings and harrowings, with large heavy harrows; to lime it well, and in autumn, sow it

"Viewed in this light, sod-burning, whatever effect it may have on light porous soils, is, in all probability, a cardinal improvement of soils of a close clayey nature; and it appears to me a matter incumbent on every possessor of such soils, to try, on a small scale at least, the effect of a frequent repetition of this operation."—*Marshall's Rur. Econ. Yorksb. vol. i. p. 312.*

with wheat. The above method was practised on one half of a field; the remainder of which was pared and burnt: the result was, that the crops upon the pared and burnt land, after the first two or three years, kept gradually growing worse; and upon the ploughed ground, the crops for some years grew better, and afterwards were visibly superior to the pared and burnt land*."

It does not appear from the above account, that the pared and burnt land had any other manure given it, though cropped for several years, than the ashes of its own produce; but it seems, though not fully expressed so, that it produced better crops, for the first two or three years, than the land which was fallowed. What then but the ashes, caused the soil to be more free and generous in spending its powers, of fertility for the immediate benefit of the cultivator, to the hasty impoverishment of itself? In my opinion, the experiment is greatly in favour of paring and burning; for if the farmer does but make a generous return for the plentiful crops which his land has produced him, there is no doubt but its fertility would be continued. The anxiousness of many farmers for present profit, induces them, when not restrained by their landlords, to crop without mercy; the pared and burnt land is frequently sown with rape, which stands to seed; next with wheat; then oats, perhaps for two or three years. It is no wonder, where such is the practice, that paring and burning should

* An accurate experiment has certainly great weight; nevertheless, tough coarse turf ought, in my opinion, to be pared and burnt. If you do not, how do you quit all the tough coarse grass roots? Also, the land lies dead nearly a whole year.

Old tough meadow, or coarse grass-land, may be much improved by being thinly pared and burnt, and the ashes spread upon it. This mode of improvement is something like cutting quick hedges close to the ground, the young shoots, in the succeeding spring, coming healthy away. The meadows, or grass-land, managed as above, in the succeeding year will be covered with good herbage. I saw an experiment of this kind in Northumberland, near Nidley-hall.—*J. Smeddle.*

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be in disrepute, and especially with landlords. The ashes certainly make the soil very fruitful for a time; but if it be not supported with manures, but constantly cropped with exhausting crops, it becomes in a few years so spent, as to be little better than a *caput mortuum**.

In my survey, I saw a field in Ryedale, which was ploughed out of grass about twenty years since, one acre of which was at that time extremely coarse and rushy, and was pared and burnt; the rest not. I was told by the occupier, the crops were uniformly better, whilst in ploughing, on the pared and burnt part, than on that which was not. The field has now been laid down to grass several years: that part which was pared and burnt, is now quite free from rushes, and is covered with a very sweet herbage, whilst the remainder is very full of rushes, and the herbage very coarse†.

Where the land is properly managed after paring and burning, it is generally esteemed, both by landlord and tenant, the best and most profitable mode of breaking up old coarse pasture ground; but where the management is opposite, it is much to be disapproved of, especially by the landlord‖.

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* These observations on paring and burning, evidently tend to shew, that it is not the burning, but the exhausting system of cropping, that does that injury, which, by superficial observers, is laid to the burning.

This practice may be performed on the thinnest soils, for manure, and the surface-soil deepened, by ploughing up a part of the sub-soil, to great advantage.—*Anonymous*.

† These reports may be fairly reconciled, when we consider, that the difference upon the face of them, may be the effect of the husbandry being good in the one case, and bad in the other; possibly the unsuccessful experimentalist might have suffered combustion to proceed so far, as to reduce the turf to a red powder, which circumstance alone, would counteract the expected fertility.—*W. Fox*.

‖ In regard to paring and burning, I am of opinion, that nothing contributes more to the improvement of an estate of maiden-soil, provided the tenant is not permitted to make too free in cropping it, for his immediate benefit, be-

The best farmers sow, first, turnips, which are eaten upon the land; next, oats, but sometimes wheat, if the turnips are consumed in time; then oats again, and fallow the following year for turnips.

About the south-east corner of the Howardian hills, if the land be strong, it is pared and burnt as early in spring as the weather will permit, then fallowed and limed for turnips: this is found to be the best mode of management of that soil.

After paring and burning, upon all soils, except where too wet, turnips, or rape, for eatage, ought to be sown the first or second year; and it is the best mode to spread the ashes upon the land after it is ploughed, which may be easily performed, by throwing all the sods from the ridges of the lands, till they are ploughed; after which, the sods must be removed back upon the ridges, to be there burnt. During the burning, the furrows are ploughed, and then the ashes scattered uniformly over the whole: the additional expence is trifling; the advantages very great. When the seed is sown, it should be extremely well har-

yond its natural course. I have pared and burnt, upon my different farms, near 1000 acres, and am persuaded, that there are not many farms that surpass mine, in the weight of the corn crops, after this process, which I have practised near thirty years, though I never ventured to pare it a second time, as very little ashes would be produced. I find no inconvenience when upon thin soils, because, after one, and sometimes two, turnip crops, the soil swells so, by being enriched, that it appears deeper than when first broken up. I allude to a piece of ground in my farm at Nunnington, called Calkless, which answers beyond all belief. On this bad land, I have reaped four quarters per acre of wheat, and, in one instance, forty-one bushels. I recommend the sods to be as lightly burnt as possible, and not consumed to red ashes. It is best to spread them as soon as burnt, otherwise the turnips and corn will grow in patches, and irregular; besides, if a high wind should come, it may blow all the ashes away which are in the heaps, although it would not touch those upon the ground.

This happened to me some years ago, upon a farm I have upon the wolds; in a few hours, the ashes which were in hills unsread, were blown off the premises, while those which were spread a few days before, remained unmolested.—*E. Cleaver, Esq.*

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rowed, that the ashes may be mixed with a sufficient quantity of soil, to retain the salts when they are dissolved by the rains, and form a matrix, in which the seed may vegetate; but the common practice is, to spread the ashes before the land is ploughed, then sow the seeds, and lightly harrow the land. In this case, the plants can derive but a very small degree of benefit from the ashes, which are buried under a firm sod, not lying close in all places to the ground, from which it was separated by the plough, which forms under-drains for the superfluous water in heavy showers to pass off into the furrows, carrying with it the solution of the salts which were contained in the ashes*.

It is from this method of sowing turnips, or rape, on pared and burnt land, that the crops are often to be seen very partial and irregular, as the seeds have not had a sufficiency of loose mould to vegetate in, and few only of the plants have derived any benefit from the ashes.

Lime is extremely beneficial, when used either the first or second year after paring and burning†; but though it may

* In my opinion, it is particularly necessary to spread the ashes as soon as the heap is burnt; if this be neglected, the inside of the heap, from the fire dwelling so long in it, becomes a hard, red, and useless brick. If it be not convenient to spread the ashes immediately when burned, the heaps may very easily be opened with a spade, in order to cool the ashes. The fire ought to be built upon a turf hearth, in order to prevent the grass roots from being burned, viz. two or three turfs ought to form a bottom for the stack.—*J. Smeddle.*

† And equally beneficial will it be found in destroying the grubs, and other insects, that are so common in land wherein this cleansing manure is not used.—*W. Fox.*

In paring and burning land, it is of great importance that the process be so conducted, as to convert the vegetables into charcoal, not into ashes. This may be effected, by burning the turf, as soon as dry enough to keep up a slow fire, from which the air should be excluded as much as possible. Vegetables, when burnt to ashes, are reduced to less than one-twentieth of their original bulk: these ashes consist of unearthy substance, and fixed vegetable alkali. When vegetables are converted into charcoal, they are little, if at all, reduced

may have the effect of making the land produce abundantly, yet care should be had, that, by a proper mode of cropping, a considerable part of those powers be applied to the enrichment of itself; and to that end, I recommend a course of crops similar to the following:

First, turnips, or rape, eaten off; second, wheat, or oats; third, peas or beans, which should be hoed, or instead of them, a green crop, either of rape, or rape and rye mixed, to be eaten off with sheep; or tares, which might be mown, either for green fodder, or to make into hay*; fourth, wheat; fifth, turnips; sixth, oats, with grass-seeds.

Or, first, rape, standing for seed; second, wheat; third, turnips, with manure and lime; fourth, oats, with grass-seeds, to remain at least *two years in grass*.

SECT. III.—MANURING.

No branch of rural economy is managed with less attention or judgment, than that of making and preserving the manure produced upon the farms. The scite of a fold, or dunghill, is generally chosen upon a hill side, where there may be a good fall for the water to run off. The eaves of the buildings usually drop into the fold-yard; the water consequently runs through the manure, and car-

in bulk. Charcoal consists chiefly of carbone: this substance enters largely into the composition of all plants, and when used as a manure, has been found, by some recent experiments, to possess a highly fertilizing quality.—*H. M. M. Vavasour.*

* For those crops, the land should be either limed or manured.—*J. T.*

I should think the third crop would be best turnips, again followed with a spring crop of grain, and sowed with seeds.—*J. Bailie.*

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ries the strength of it either into a road or ditch, where it is entirely lost to the farmer ; but much of this waste of manure, or what might be converted into manure, is to be attributed to the want of due arrangement and accommodations in the farm-buildings, and to their being placed in situations little adapted to the purpose, as has already been noticed in chapter III. sect. II.

A few attentive farmers are in the practice of having a year's manure before-hand ; while others, as soon as the fold-yards are cleared of cattle, have all the manure turned over, and laid more compact, which brings on a strong fermentation, and makes it tolerably fit to use for turnips that year.

It is a prevailing opinion amongst the best farmers in this district, and appears to be well founded, that dung, applied immediately for the wheat crop, increases the quantity of weeds, and causes it to run too much to straw, and to lodge, whereby the grain produced is small : it is therefore a general practice with those farmers, when they manure their fallows with dung, to sow them with a spring crop of corn, and wheat to follow ; by which means, those inconveniencies are avoided. For turnips, dung, when it is to be had, is always used, except upon pared and burnt land, and is laid on immediately before the last ploughing.

Grass-land is dunged immediately after hay-time, early in winter, or in spring. Upon cold stiff land, the first and last periods are thought the best, because, as the grass will grow through and over the dung, at those seasons, in a very short time after it is spread, it is thereby prevented from being lost, by being washed away, to which it would be liable on such lands, or injured by the evaporation of its juices. On light dry land, on the contrary, winter is preferred, because the dung, being opened and tendered by the
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the weather, easily parts with its salts, its most valuable property, which are carried down by the rains to the roots of the plants which are to be fed by them. Injury by evaporation, at that season, is not to be expected.

Lime is in general use, and, when the land has not been long in ploughing, is found to answer very well on all soils, but incomparably well upon land first pared and burnt. It is seldom laid upon grass-land, except in composts, and is applied to a great extent, and with peculiar advantage, on the rich arable lands of Ryedale, and with equal advantage, though less extensively, on the grass-lands.

Lime is the peculiar manure for the wheat crop, and is thus extensively applied. Where lime is suitable to the soil, it is thought to have the best effects upon this crop, particularly on rich land; where it is otherwise apt to lodge, it renders the straw firm, and able to support a large ear, and heavy grain.

In Cleveland, this manure is procured from Sunderland, in the county of Durham; a distance, by land, of from twenty to twenty-four miles, and is two days work for the team. The price at the kilns, is 6s. per chaldron; but much of the lime is brought by water into the river Tees, where it is sold at 17s. 2d. per chaldron; and as from two to three chaldrons per acre are frequently used, great advantages ought to be reaped, to repay so great an expenditure. The effect of lime is, however, here thought to be in a great measure worn out, in consequence of long and too frequent use. This constant application of lime, has had the effect of rendering the land liable to run to mortar in winter, and to bake much in summer; nor can this evil be remedied, but by converting the land to grass, and allowing it to continue long in that state, or, probably, by applying to it a larger quantity of vegetable or animal manure

pure than can be procured. Lime is universally found to operate most powerfully and most favourably upon all new lands, but, by long application, it will cease to have any effect, except reducing land to sterility, however fertile before; and instances are not wanting, where this effect has already been produced.

Lime is an utter enemy to ling, or bent; so much so, to the former especially, that wherever *even limestone unburnt* is thrown down upon ling, in no great length of time, the chippings of the stones, and the substance washed from them by rain, entirely destroy the ling, and produce a fine sweet herbage.

In the Western Moorlands, when land, over-run with ling and bent, is intended to be improved, it is the practice to lay on three or four chaldrons of lime per acre, which, in one year, entirely changes the natural produce to that of a fine turf, full of white clover.

The quality of lime in the North Riding, varies in a great degree; the richest and best, for the purposes of agriculture, is invariably produced from the darkest coloured stone, very nearly approaching, if not absolutely, black marble: this is found in many parts of the Western Moorlands, and in some parts of the borders of the Eastern Moorlands. The limestone of the Howardian hills, and of several other parts of the Riding, is a whitish, soft, coarse stone; the lime made from which, is of much inferior quality for agricultural purposes, and cannot be used so plentifully as that produced from the dark blue stone.

Lime is burnt with coal, in kilns built of limestone, in the shape of an inverted cone, without mortar, and sometimes lined with bricks; the size sufficient to burn from fifteen to thirty-five chaldrons, of thirty-two bushels each.

Standing-kilns and draw-kilns are both used; the former are most common, in which the lime remains undisturbed until

until the burning is completed; from the latter, the lime is drawn out at the bottom, and is repeatedly supplied with stone and coal at the top.

The expences of burning, are as under:

At Pickering kilns, in the eastern part of the district—labour in raising, breaking, filling, and drawing, per chaldron,	£.	s.	d.
	0	2	0
One-third of a chaldron of coals, and carriage,	0	6	4
Per chaldron,	0	8	4

The selling price, 9s. per chaldron, of thirty-two bushels.

At kilns in the western part of the district—labour in raising, breaking, filling, and drawing, per chaldron,	£.	s.	d.
	0	1	8
Four loads (of three bushels each) of coals,	0	4	6
Per chaldron,	0	6	2

The selling price, from 7s. to 8s. per chaldron.

No attempts have been made in this Riding, of burning lime with wood, or peat; nor are any kilns made use of, where lime is burnt along with bricks, or other articles, as practised in many parts.

Kelp-ashes are principally engrossed by the proprietors of the alum-works along the sea-coast, but are sometimes used for grass-land, and found to be a very valuable manure.

Turf or peat-ashes, the produce of the fuel of the inhabitants, are used in the dales of the moorlands, and along the

the coast: they are an excellent hand-manure for grass, or any kind of crop, but especially for turnips. In many parts of England, peat is burnt for the sole object of the ashes for manure; and so certain are they to procure a crop, that they are purchased by farmers at great prices, and carried to very considerable distances. In many parts of the district under survey, peat-mosses are too frequent; but they are never applied to the purposes of making ashes, the value of this article being not sufficiently understood*. Peat alone, when laid upon heaps to fall and ferment, makes an excellent manure for most lands, particularly for grass, but when mixed with a small quantity of lime, is probably exceeded by none.

Composts are much used in the northern part of the vale of York, and, in some degree, in almost every other part of the Riding: they are made of the cleanings of ditches, and sometimes of the shovellings of roads, mixed with lime, and all thoroughly incorporated: though it is not a strong manure, yet it is found to be very beneficial to grass-land.

The shovellings of roads are used only by a few individuals; and notwithstanding many of the roads in this Riding are repaired with limestone, and the shovellings collected in heaps, few will be at the trouble of carting them away: these, mixed with a little lime, some earth, and fold-yard manure, make an excellent compost.

ISAAC LEATHAM, of Barton, near Malton, has made a compost of earth and soot, or pigeons' dung, in the proportion of two loads, of thirty bushels each, of the first, to eight bushels of either of the last, spread in layers of six

* A Yorkshire farmer will scarcely believe, that in Berkshire, the liberty of cutting out the peat from one acre of ground, has been purchased at the price of gold. ! Thousands of acres in this Riding contain as much and as good peat, the freehold of which may be purchased for a quarter of as many shillings.—
W. S.

inches (*stratum super stratum*), to the thickness of three or four feet: if the heaps are cut down perpendicular, at the time of carrying them away, the compost will be sufficiently mixed. He has found it answer well for wheat, and artificial grasses, if laid on early in the spring.

BARTHELEMY RUDD, of Marsk, makes composts of kelp-ashes, sea-weed, slam, from the alum-works, and lime, all mixed together with earth, and finds them to answer well*. Slam he has not long used; but, from the experience he has had of it, he thinks it very beneficial.

Whale-blubber, and the refuse of the oil, mixed up with lime and earth, is frequently used in the neighbourhood of Whitby †.

Sea-wreck, or sea-weed, is frequently thrown up by the tide on the coast, after blowing weather, and is often made use of: when it has been laid some time in heaps, to ferment, it becomes tender, and, being strongly impregnated with salt, is an excellent manure.

A few instances have occurred in the vicinity of the sea, of the use of sea-sand as a manure, and always with the greatest success; a more valuable manure can scarcely be devised for the districts of Cleveland and the coast,

* Slam is a refuse in the making of alum; but of the component parts of which, I am not sufficiently acquainted with chemistry, to be qualified to speak.—*J. T.*

Alum generally contains as follows:

Clay	-	-	-	-	-	18
Vitriolic acid	-	-	-	-	-	38
Water	-	-	-	-	-	44
						100

H. M. Vavasour.

† Would it not answer to the owners of those ships, which may not be fortunate enough to acquire a full loading of the most valuable parts of the fish, if they were to complete it with the large bones? These, when brought hither, might be rasped, in the same manner as the woods are for the use of the dyers, which would make an excellent manure, to be used as a top-dressing.—*J. T.*

where

where the wet adhesive clays want draining and breaking, and in most parts of which, it might be easily procured: it is, there, probably not generally used, because it may at all times be had, and always for nothing, and is therefore too plentiful to be valued.

It does not appear that marl is now made use of in any part of the Riding, though there is reason to believe that it has been at some distant period; it is to be met with in several places, as has already been mentioned in chap. I. sect. V. p. 21.

No manure is procured by folding of sheep; that practice not obtaining in any part of the Riding.

SECT. IV.—WEEDING.

HAND-WEEDING of corn is generally practised, in a greater or less degree; and drills, for sowing corn, are coming into more general use than heretofore, by which, the land is much more easily, and at less expence, kept clean.

There is one article under this head, which is too little attended to in this district, as well as in most other parts of the island—that is, the cutting of thistles in the hedges, banks, and other waste places of inclosures, and also in the lanes and commons; by this neglect, the country becomes furnished with a succession of that troublesome weed. As it is not an individual alone, that is interested in the checking the propagation of it, a power would be well placed in the juries of manorial courts, of inspecting all the grounds within their respective manors, a short time before the seeds are perfected, to see that all are cut down. They who

who have neglected, ought to be fined. Weeds in the lanes and wastes, might be cut by the direction of the surveyor of roads, and the expence placed to their accounts.

SECT. V.—WATERING.

NOTWITHSTANDING this branch of improvement has been successfully practised in some of the southern and western counties for many years, yet is it almost unattempted in this Riding, which affords so many situations where considerable quantities of land might be watered at a very small expence; indeed necessity has driven some individuals, in dry summers, by stopping the course of brooks and rivers, to turn the water over such of their pastures as were capable of receiving the benefit; but I have not met with one instance of a regularly watered meadow*.

The lands immediately adjoining all the rapid rivers or streams, are well situated for that improvement. Land to a considerable extent, adjoining upon Cod-beck, from Thirsk, northward, and upon each of the rivers Leven, Wiske, Swale, Ure, the Rye, and the Derwent, are well situated for being benefited by irrigation, as well as much land upon the smaller becks. The dales of the moorlands are singularly well circumstanced for this improvement; scarce a field in them that has not a stream of fine spring-water running through it; and in the Western Moorlands,

* The neighbourhood of Peirse-bridge affords a specimen of watering meadows.—*Anonymous.*

It seems more adapted to some soils than others; perhaps, as well as the soil, there may be also something in the water.—*J. H.*

This practice can never be too forcibly recommended.—*W. M.*

most of the streams issue out of limestone, which is thought to add considerably to the fertilizing properties of the water.

Though so little can be said on the subject of irrigation in this Riding, it may not be foreign to the subject to make up for that deficiency, by giving an account of two methods of watering up-land grounds; one of which is peculiar to the district under survey, and the other, only to be met with in it, and the East Riding of the county.

Artificial Rills.—It has already been noticed, that on the northern margin of Ryedale, and the Marishes, a range of limestone heights extend in an eastern and western direction for many miles, but which, in width, is no where more than about four miles. This tract is entirely destitute of water, except what flows along the bottoms of the deep vallies by which it is intersected, and which are several miles asunder; little relief can consequently be afforded by streams thus distantly and inconveniently situated, to the inhabitants or cattle of the up-lands. A person of the neighbourhood, about thirty years since, devised the means of watering this tract by rills, brought from the springs that break out at the foot of the far more lofty moorland hills, that run parallel to, and at the north of this tract, in some instances at about the distance of ten miles.

These springs he collected into one channel, which he wound about the intervening tract, according to the level of it, and along the sides of the vallies, until he gained the summit of the arid country which he wished to water; having accomplished this, the water was easily conveyed to the places desired, and also to ponds in all the fields, over a considerable tract of ground, in general falling with an easy and uniform descent to the south. In no instance, is it apprehended, that more than two rills have been required to supply the tract between each of these intersecting val-

lies;

lies; and frequently the channel has been found sufficient to convey the stream for several miles from its source; after which, it forks off into two branches, to each of which, more or less water is given, according as the country through which it has to pass, may require a greater or less supply.

The first of these rills, is said to have been brought to Kirkby-moor-side about thirty years ago; since which time many others have been made. The original expence of each rill, which rarely exceeded 100*l.* was defrayed by a subscription, proportioned to the benefit each person was to receive; and they still continue to be supported by the same means, though, in one instance, in a late act of parliament for the inclosure of a lordship through which one of these rills is conducted, a rate is laid on the land benefited by it, and means prescribed for compelling, if necessary, the future payment of it.

The plan for thus watering a dry up-land country, has much merit: it affords a wonderful accommodation to the occupier; increases greatly the value of the property; and, though not applicable generally, might certainly be adopted with great advantage in various other situations.

Artificial Ponds.—The other method of supplying an up-land country with water, was the invention of a man residing on the wolds of the East Riding; a dry chalky region, entirely destitute of water, except what may be derived from wells, so deep, as to render the value of the labour in making use of them, greater almost than the value of *one of the elements.*

This desirable object he accomplished by means of ponds, made to be so retentive, as to hold water in any soil; and so easily supplied with water, as to be capable of being made in almost any situation; and at an expence so reasonable, as to deter no one from enjoying the benefits of them.

It

It is about thirty years since they were first executed in the East Riding: they are now universally to be met with there, and are widely extended into the North Riding, in situations that require such accommodations.

It is unnecessary to state the various modes of improvement in making them, which have taken place during that period, or the various means of simplifying the process, or lessening the expence; it is sufficient to state the present improved practice, which, if followed, will be found to succeed in almost any situation in any country.

Let a circle be marked on the ground, sixty feet in diameter, more or less, as the person chooses, or the size of the pasture may require a supply of water, and if of that diameter, let it be hollowed out into the shape of a basin, or bowl, to the depth of seven feet in the centre; when the surface of this hollow has been raked smooth, let it be well beaten over, so as to reduce it into as even, uniform, and firm a surface as the nature of the ground will admit of; on this, well fallen, skreened lime must be uniformly spread, with a riddle, to the thickness of two or three inches; the more porous or open the ground, the greater will be the quantity of lime required: this lime must then be slightly watered, to make it adhere firmly to its place, and great care must be taken to spread it equally, so that no place remains uncovered, as on the lime depends, more than any thing else, the success of the work. On this lime, must be laid a bed of clay, to the thickness of about six inches, which, being moistened sufficiently to render it ductile, is to be beaten with mallets, or beetles, into a solid compact body, capable of being trod upon without impression or injury. Great care is to be taken in laying on uniformly this mass of clay, and beating it into a compact body; for which purpose, not more must be spread at a time upon the lime, than can undergo the

beating while it retains a proper temper or consistence for the purpose; after the whole is thus finished, it is gone over several times by the beaters, and sprinkled each time with water, and care is taken to prevent any cracks being formed, which might entirely destroy the power of retention.

Pure brick-clay is not required; but any tenacious earth, that by beating will become of a solid compact body, will answer the purpose. As soon as this operation has been duly performed, the whole surface of the clay is covered, to about the thickness of a foot, with broken chalk, fine gravel, or the chippings of mouldering stone, or limestone, to prevent any injury being done by the treading of the cattle. It is necessary to observe, that coarse stones, or any stones of a texture that will not unite into a solid body, must not be made use of, as such are liable to be displaced by the treading of the cattle, to be pressed into, or through the bed of clay, or to be rolled down to the bottom of the pond; under all which circumstances, the beds of clay and lime are liable to be broken, and the water consequently let out of the pond. Sometimes the clay is covered with sods, the grass side being laid downwards, as a support to the gravel, by which some saving of covering may be made; or several inches thick of common earth is laid upon them, or upon the clay without the sods, by way of bed for the covering, where gravel, or such like materials, may be scarce, by which something may be also saved.

After the clay has been well beaten, some workmen water the surface of it, and fold sheep, or pigs, for a considerable time upon it; the treading of which, is found to be serviceable in rendering it more compact.

Some people, instead of using slaked lime, have good mortar, made of lime and sand, well worked together, and

and cover the surface of the ground with it, to the thickness of about an inch; this, if carefully done, is thought by many, to be the most effectual mode of rendering the bottom retentive; but the mortar is liable to crack before the clay gets bedded over it, which must be carefully guarded against. Ponds have been made, where a coat of mortar has also been spread over the surface of the clay, as well as under it—an approach, perhaps, as near as possible to perfection—but where lime bears an high price, the expence is thus considerably augmented.

The best season for making these ponds, is thought to be in autumn, as they are then likely to be filled the soonest, and the least liable to crack before they are filled. Should the weather prove dry at the time they are finished, it is well to cover their surface with straw, or litter, to hinder them from cracking.

These ponds are usually made at the foot of some declivity, where, after heavy rains, a slight run of water may be conveyed into them, from some road, or other firm surface; but many are placed without any such assistance for filling, or with very little, it being found that the rain that falls upon their surface, is, in general, sufficient for a supply, after they have been once filled. As it is desirable to get them filled as soon as possible after they are finished, snow is frequently collected, and heaped upon them if possible in large quantities, the first winter after they are finished, for that purpose.

Ponds of this kind, are usually made by what may be called professional people; men who go about for the purpose, and are chiefly, or entirely, engaged in it, and usually contract for the job. One of the diameter of sixty feet, and depth of six feet, may, in most situations, be executed for about 15l.; one of forty-five feet by five feet, for 10l. or 12l.; but some allowance must be made for the

different prices of lime, or the distance it may be necessary to convey it, as well as the clay, or the other materials for the work. A pond of sixty feet diameter by six feet deep, will contain upwards of 700 hogsheads of water; one of forty-five feet by five feet, near 400 hogsheads—a vast supply, when obtained at so small an expence.

Experience, now, of many years, and the universal use of these ponds in this country, wherever wanted, have proved them, when carefully made, so effectually to retain water; to preserve it of so good a quality, when not fouled by the treading of cattle; and to be applicable to so many situations, that they cannot be too strongly recommended in all high situations, where water may be much wanted, or in all other situations, where the water may be of a bad quality: they are equally applicable to our dry wolds, downs, and heaths, which are without water, as to every fenny tract which has too much of it, but of a brackish or unwholesome quality.

different

CHAPTER XIII.

LIVE STOCK.

SECT. I.—CATTLE.

THE breed of cattle throughout the North Riding, is the short-horned, except towards the western extremity, where some small long-horned cattle are to be met with, and also a mixed breed between the two; the natural consequence of bordering on the West Riding and Westmoreland, the countries of the long-horned breed.

The short-horned cattle of the northern part of the vale of York, and of Cleveland, where also considerable numbers are bred, are known by the name of the Tees-water breed, and in the south of England, by that of the Holderness cattle, from the district of that name in the East Riding, where this breed was either originally established, or first so improved, as to bring it into notice, and where, with the district now under survey, the best of the breed are still to be met with. This district is supposed to produce the largest cattle in the kingdom; and several proprietors of stocks have, of late years, at considerable expence, attentively improved them, encouraged thereto by the great prices given for cattle of this breed, in consequence of its increasing reputation. But it is a matter of regret, that a

CATTLE.

great want of attention among the generality of farmers, in improving their stocks, should still prevail; which can only proceed from a narrow and ill-judged parsimony, as spirited improvers are scattered over most parts of the Riding, through whom, at little additional expence, they might obtain the necessary improvement*.

The cattle of the improved breed, are very large and handsome; their colour, red or black blotches, distinctly marked on a white ground; their backs, level; throat, clean; neck, fine; carcase, full and round; quarters, long; hips and rumps, even and wide: they stand rather high on their legs; handle very kindly; are light in their bone, in proportion to their size; and have a very fine coat, and thin hide.

The best farmers, who have lands suitable, breed, and completely fatten their cattle. Their steers (young oxen), when three-parts fat, in the autumn, after they are three years old, now (1798) sell from 15l. to 21l. each, and in the spring following, when completely fat, from 22l. to 30l. each.

Very few oxen in the northern part of the vale, and Cleveland, are used for the purposes of draught.

HENRY PEIRSE, Esq. of Bedale, has a breed of very large hornless cattle, which he shewed me when I made this survey: the cows were very handsome, clean, and well made. He had then a pair of oxen (rising four years old) feeding, one of which was killed in October, 1797;

* The principal encouragement given to the short-horned breed of cattle, arises from the coal-trade, which is supplied by coarser beef; and if the farmer only gets them to a high weight, he does not attend so much to the quality, as in other countries where they are sold to retail-butchers: the cows of this kind are well liked in London, as they give the most milk. The best short-horned cattle are bred near Darlington. Mr. ROBERT COLLING, of Barton, has the best bull of the kind, perhaps, in the kingdom; and he is equally famous for his breed of sheep.—*E. Cleaver.*

the

the four quarters of which, weighed 162 stone nine pounds; tallow, twenty-one stone ten pounds—fourteen pounds to the stone.

In the southern part of the vale of York, breeding of cattle is not so much attended to as in the northern part, the object of cattle there, being for the dairy, for the making of butter and old-milk cheese, and consequently the milk alone is attended to. The calves there, are all fed for the butcher, except what are sufficient to keep up the number of cows*, and therefore very few farmers pay any attention to the improvement of their stock; nor indeed, under such a system, is it so necessary for them to do it. There is scarce one breeder in ten, who would send a cow five miles to a good bull, and pay five shillings for the use of him, if he could obtain the calf by any ordinary bull nearer home, at the common price of one shilling for each cow; nevertheless, there are a few who pay considerable attention to the improvement of their stock; and it is hoped that their example will have a good effect on their neighbours.

The cattle of the Western Moorlands are small; in the lower parts of the dales, they are generally of the short-horned kind; but in the higher situations, near the moors, and on the borders of the West Riding and Westmoreland, the long-horned breed prevails; and in consequence of there being two breeds in the neighbourhood, it is natural that there should be a considerable number of a mongrel, or mixed breed, between the two: this mixture, in the

* So much more to their loss; for were the calves entirely meant for the butcher, there would be a greater difference than 5s. betwixt the produce of a good bull and a bad one; but as they are sometimes bred to keep up their number of cows, the difference, both to themselves and to the community at large, would be great indeed, would they be open to conviction, and make use of no bull but such as are approved good ones; such, I grant, are not plentiful, but they would soon be more so, were they more sought for.—W. M.

opinion of many there, produces the best breed; they are rather heavier than the true long-horned, and graze more kindly than the short-horned, and weigh, when fat, from thirty-five to forty stones, fourteen pounds each.

In the Eastern Moorlands, and the coast, a great number of very good cattle are bred: they are not quite so large as those of the Tees, but are clean and fine in the bone, and are free feeders. Great numbers of the oxen are sold at six or seven years old, and then are sold to the graziers of the south of Yorkshire, and of Lincolnshire, by whom they are sent to every other breed.

The good qualities of the cattle of this district, seem to be more owing to nature, or accident, or all of these united, than to the care and attention of the breeders; and the improvement is very feeble indeed.

In Ryedale, with the Wharfedale and Howardian hills, many cattle are bred; and a considerable degree of attention is paid to their improvement by several spirited individuals; and here, next to the banks of the Tees, the best of the short-horned cattle bred in this Riding, are to be met with. The breed formerly was crossed with bulls from Holderness; but since the Tees-water bulls have taken the lead, they have been chiefly resorted to for improvement; so that the breeds of the two districts are nearly the same; but when there is much of the Holderness breed retained, they are rather larger in bone and shorter in the leg, and do not feed quite so quickly as the Tees-water. (See plate ix.)

The following are the dimensions and weight of a cow, five years old, bred by J. DOWKER, of Salton, which was killed in the spring of 1793: height, at shoulder, four feet seven inches; length, from horn to tail, seven feet six inches;

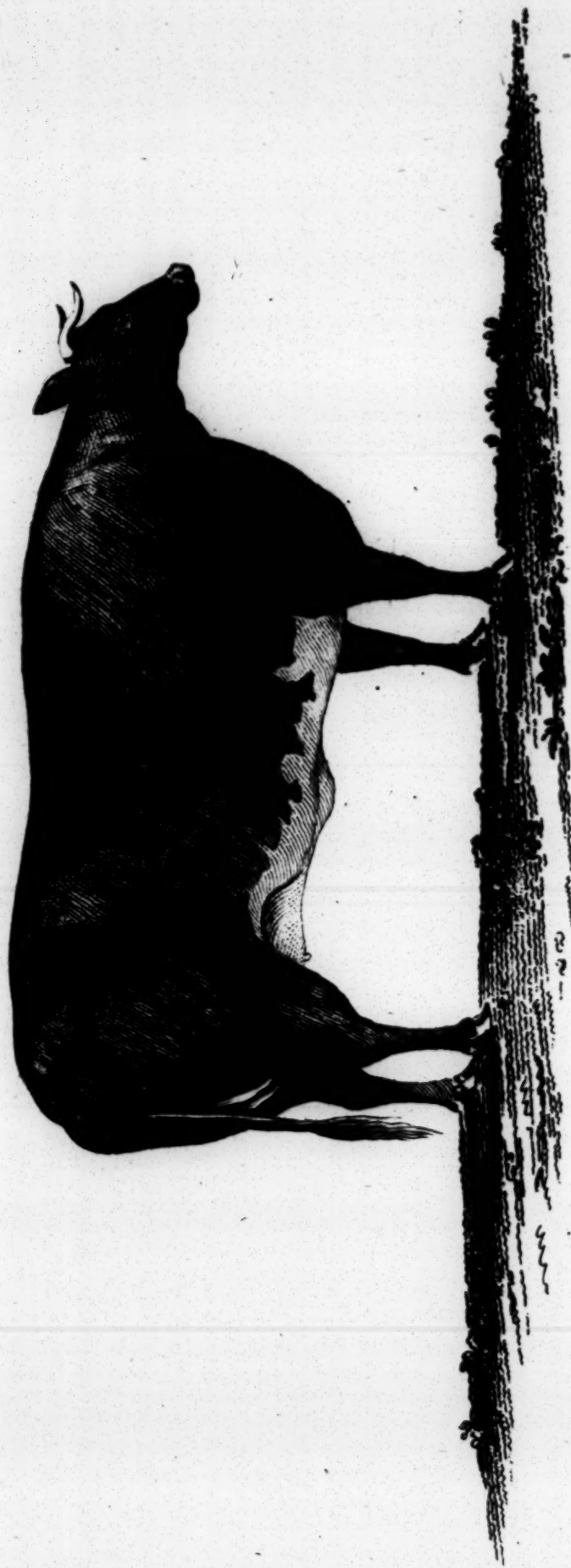
Plate IX
P. 250.



A Tees-water Bull, belonging to George Coates, Londonderry, 1793.

N^o. 1.

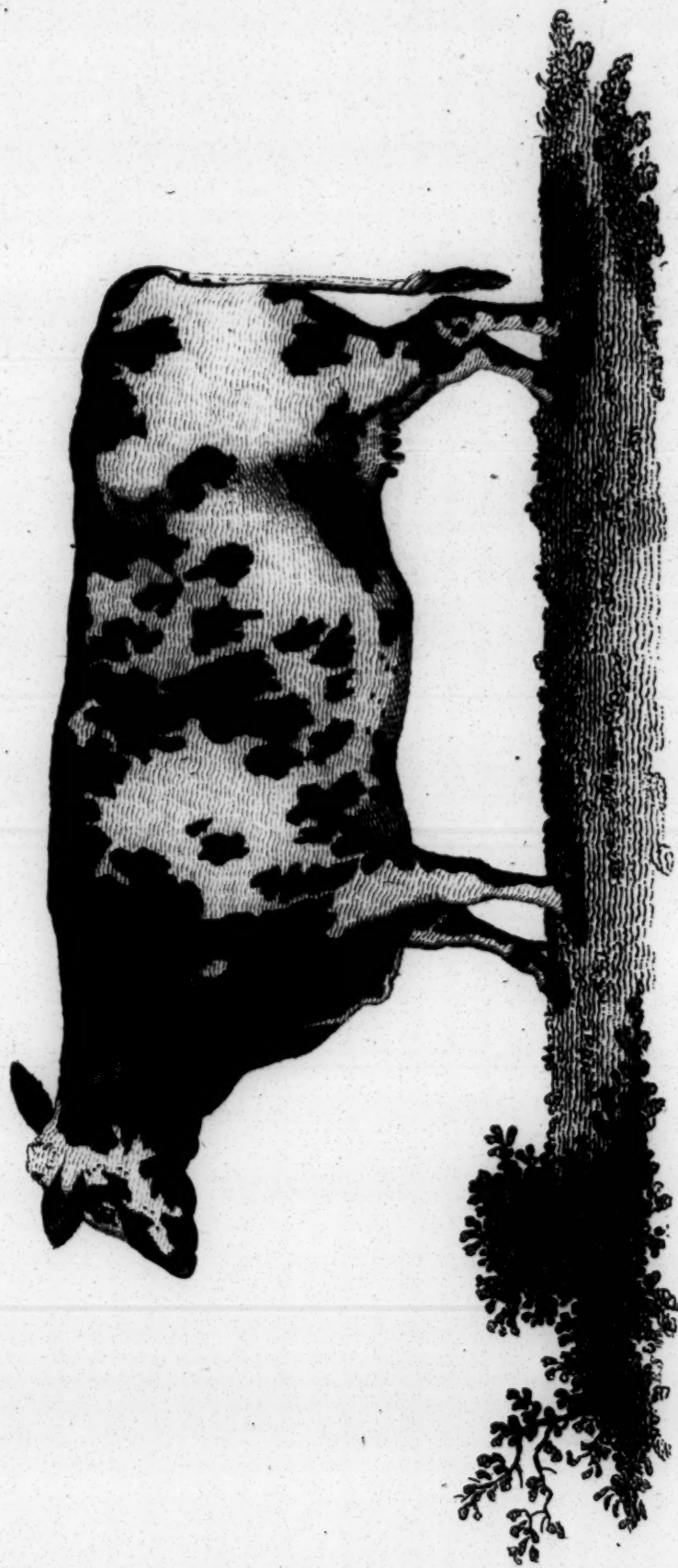
Made in Ireland



A Tees water Heifer, belonging to E dw. Cleaver, Esq.

N^o 2.

788



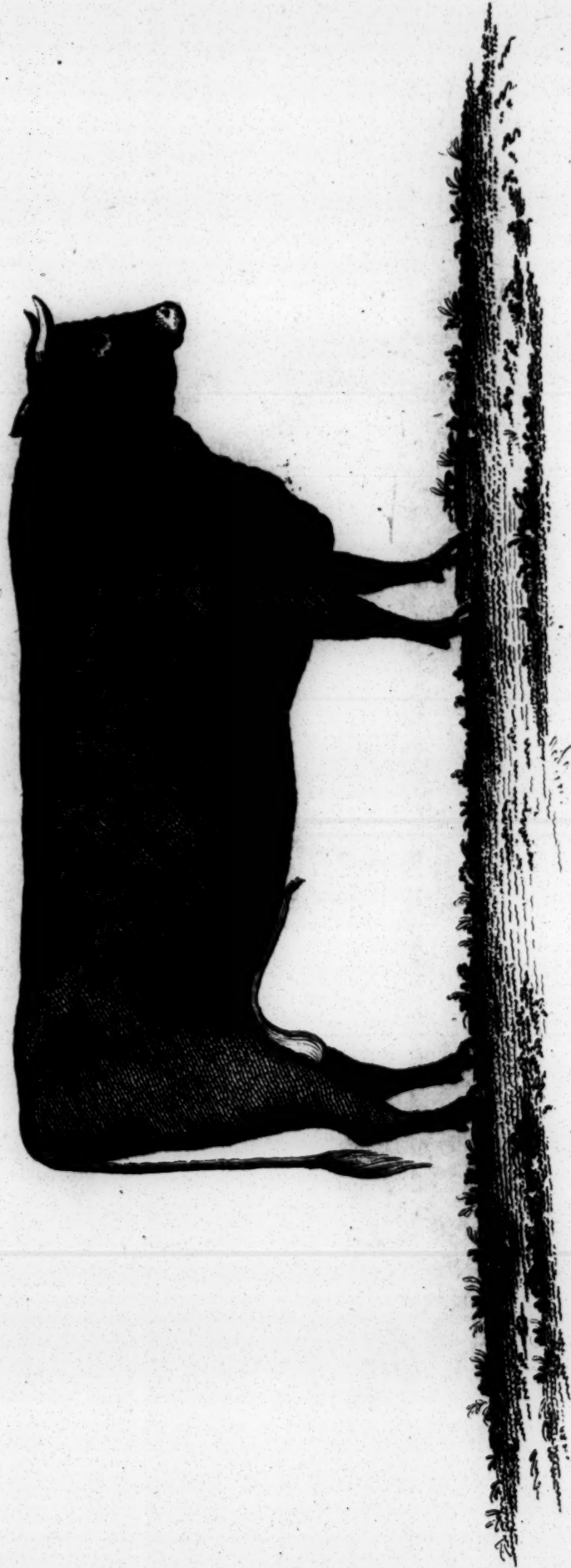
A Polled Tees-water Cow, fed by Rich.^d Raisen, Bishopthorpe.

1845



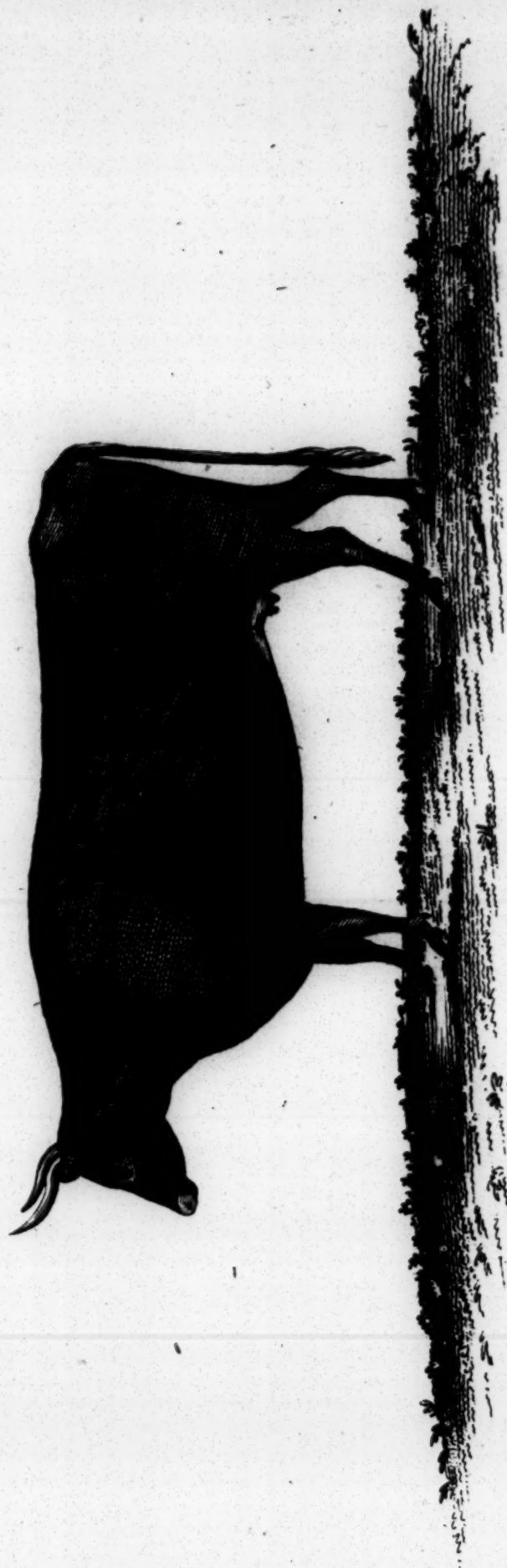
1845

1845



A Sussex Bull the property of Edw.^d Cleaver Esq^r.





A Sussex Cow, the property of Edw.^d Cleaver, Esq.

100



A Half-bred / Sussex and North Riding / Heifer, 2 years old, belonging to E. Cleaver, Esq^r.

inches; girth, behind the shoulders, seven feet ten inches; round the hind ribs, nine feet seven inches; width, across the hips, two feet four inches: her four quarters weighed ninety stones, fourteen pounds each.

A heifer, of the Tees-water breed, four years old, belonging to E. CLEAVER, Esq. and bred by G. COATES, of Londonderry, near Bedale (see plate x.), was killed at York, in the spring of 1799: her four quarters weighed ninety-nine stone six pounds; tallow, nine stone eight pounds.

A five-year old hornless cow (see plate xi.), bred in the neighbourhood of Bedale, and by RICHARD RAISEN, at Bishopthorpe, near York, is described as follows: height, at the shoulder, five feet; from the fore-head to the setting on of the tail, four feet eight inches; width, across the hips, two feet four inches; girth, behind the shoulders, seven feet six inches; and a half—weight, eighty-five stones.

Some attempts have been made to improve the cattle of this district, by the introduction of a foreign cross: the Earl of CARLISLE, by the Dutch breed, and E. CLEAVER, Esq. by the Sussex breed. These two breeds nearly resemble each other, and the effect of them has been to produce more kindly feeders; to reduce the size a little; to rather shorten the leg, and render the bone finer; and to improve the whole form. These, of all others, appear to be the best cross for the short-horned cattle. In gene-

* The Sussex breed is fine in the head and bone, with an eye remarkably full and lively; deep in the breast, wide in the hips, clean in the thigh, and of a deep blood red colour, and shews remarkable agility and quickness; and consequently, is an excellent cross for producing working cattle: they generally milk better than the long-horned breed.

In order to give the farmers of this Riding a more perfect idea of this breed, I have given drawings of a bull and cow, and also of a half-bred Sussex and North Riding heifer, all belonging to E. CLEAVER, Esq. (See plates xii. xiii. xiv.)—J. T.

ral figure and appearance, the two breeds much resemble each other: they can mix, without producing a mongrel progeny; too often perceptible, where attempts are made to improve different breeds of animals by crossing. The Sussex breed possesses lightness of bone and activity of gait; both of them frequently wanted in the short-horned cattle. The great strength of the short-horned ox, particularly qualifies him for the draught, but his unwieldy figure, and slow progress, are great objections to his use. By this mixture, a race seems to be obtained, not much differing in figure from the short-horned breed, but possessing muscular powers, united with activity. Thus, are done away the most material objections to the use of cattle, as beasts of draught: the Sussex breed, for that purpose, undoubtedly ranks among the first in the kingdom.

The following is the weight of a five-year-old ox, thus bred, by E. CLEAVER, Esq. which was killed at York, in the spring of 1796—the four quarters, 109 stone five pounds.

Some very useful cattle have been bred by a cross with a short-horned cow and a Craven bull; but the true short-horned breed is generally preferred, as they get to a larger size, and are thought to be fatted in as little time as the other*.

* In digging a lock-pit for a canal, near York, was lately found, about twelve feet from the surface of the ground, the skull of a beast, probably of a bull, with the core of the horns affixed to it, in a perfect state. Each core measured, in length, two feet and half an inch, and, in circumference at the root, one foot one inch and an half. The horn of a beast, is generally about one-half as long again as the core; these horns, therefore, could not have been in length much less than three feet, or in circumference, less than eighteen inches; a size far surpassing that of the horns of the long-horned breed of cattle, or of any now extant here. Notice of the discovery of similar horns, is taken in some of the other surveys, as well as elsewhere, and indicates, that formerly an animal of a much larger size, or whose means of defence were much more formidable than those of any which now remain, was an inhabitant of this island.
—W. S.

Rearing

Rearing Calves.—The time for rearing calves, is December and January, for “stot-calves;” and from that time to the beginning of April, for “whies” (heifers). They are usually kept the first fortnight on new milk, which they drink out of a pail from the first; they are then served with mixed milk, one-half of which, at least, is old, and which is previously boiled; and in a short time, the new milk is gradually diminished, until they have only that which is old; or, if milk be scarce, porridge, made either with linseed, or the flour of linseed cake, or bean-meal, or oat-meal; any of these kinds of porridge, with the addition of a little old milk, is found a wholesome and palatable diet for them. They are nursed in this manner until grass grows in the spring, and late calves rather longer. As soon as they will eat hay, they are generally indulged with some of the sweetest and best that can be got, and sometimes with a little bean-meal to lick. They are usually kept loose in a house, some of which have a loose-boarded floor, or the boards nailed at a small distance from each other, so as to admit the wet more readily to drain away: this is bedded with straw; and they are thus kept dry and warm, which is found to contribute greatly to their health, and promote their thriving.

The time of gelding the bull-calves, is when about six weeks, or two months old.

The following winter, calves are always indulged with hay, and a few turnips, upon those farms where turnips are grown, and are kept either in a warm fold-yard, with a shed to go under, at pleasure, or wholly under cover, loose.

Drawing Oxen.—In the western part of this Riding, oxen are rarely worked, but in the Eastern Moorlands, the coast, Ryedale, and the Howardian hills, the practice prevails much; the cattle of those districts being, from their
natural

natural strength and hardihood, arising from the nature of the country in which they are, in general, bred, well adapted to that purpose. They are trained to labour at two, or two and a half years old, and are worked until five or six years old; but a few years since, when the demand for cattle was not so great, it was not uncommon for them to be worked several years longer, even to ten years old.

The prevailing mode of working them, is in yokes; but some have used harness, which, in general, they have thought preferable. In harness, an ox steps out much more freely than when his nose is pressed down almost to the ground by a yoke. In his natural gait, an ox walks nearly as erect as an horse, at least his neck is on a line with his back; and an horse in a team, when drawing at his ease, does not carry his much higher: thus harnessed, and thus going without more restraint than the horse suffers, the pace of an active ox is nearly equal to that of the horse; and he appears equal to his rival for most of the purposes of husbandry; and, on account of the steadiness of his draught, he is his superior at a dead pull, at a steep ascent, or in a miry road: here the horse fails, or at least the *half-bred bit of blood* of this Riding. Where the ox fails, is in long journies on a stoney road; and no roads are harder, or more stoney, than the generality of those under survey; there, his feet let him down; without shoes, they are too tender to allow him to travel on them; without them, he is only fit for the work of the farm. In shoeing an ox, there is some difficulty: his hoofs do not hold the nails as well as those of an horse, and having twice as many shoes, there is twice the chance of his losing one; and, barefoot, he is less able to travel than the horse on a journey—this is a serious inconvenience. With these disadvantages, and these recommendations, the farm is the

scene

some of the ox's labour: he ought to perform the internal work of it; and where much business is to be done on the road, or at a distance, it ought to fall to the share of the horse. Under this distribution of labour, many more oxen might be employed than at present, and the number of horses proportionably decreased, with little doubt, to the advantage of the farmer, and certainly to that of the public. It scarcely appears necessary on any farm, however large, to keep more than one team of horses, and those for the road; this, however, is no where the practice.

Working oxen are usually shod at an expence of 2s. each; an operation attended with some nicety. Few smiths, though they can shoe an horse well, are able to shoe an ox. This arises from the thinness of the hoof, in consequence of which, they are apt to drive the nail into the quick; and, from the brittleness of it, it will not hold the nails. The operation too, is always performed in a very awkward manner; more so than in most other places. The feet of the oxen being drawn together with strong ropes, they are always cast or thrown down, which is sometimes attended with accidents, the beast being irrecoverably lamed, strained, or otherwise injured. The shoes are always made very thin and broad, covering great part of the foot, and rather turning up at the toe between the hoofs: they are fastened on with broad flat-headed nails, covering with their heads great part of the shoe. Improvement is much wanted in the whole of this operation, by which many of the inconveniencies of it might be obviated. But it seems as if none had been hit upon, since the first invention of shoeing, and the first use of oxen as beasts of labour.

Oxen which are not worked, are fed off at three or four years old.

Bulls

Bulls are frequently worked in the dales of the Eastern Moorlands, and near the coast; they are found able to perform much work, and are thereby made more gentle; but in a country where an emulation in breeding prevails, every breeder wishes his male stock particularly, to appear in the greatest condition, and to the most advantage he can, with which, working the bull does not accord. This may probably be the principal reason why they are not more frequently put to labour.

Feed of young Stock.—One and two-year old cattle are summered in pastures of an inferior quality; and in the winter, when rising two or three years old, are either kept in the straw-yard, or tied up under cover, and fed with straw, but are turned out for a short time in the day, for water and exercise. This last is thought the more economical way, not only in making the straw go further, but the cattle thrive better, in consequence of eating their food quietly by themselves, instead of being disturbed by each other—the necessary consequence of being loose in a fold-yard. As the heifers come forward with calf, they are indulged with better meat, by the addition of a few turnips, or, where those are wanting, by being foddered with hay in the fields; or, after being turned out in the day time, having hay given them in the house at nights.

Working oxen are wintered principally in the straw-yards, but when in work, have generally some hay. In the summer, they go with the young cattle before mentioned.

Grazing.—Summer-fed oxen and cows have always the best pastures allowed them, and the prime of the fog, and sometimes the second crops of clover and sainfoin. The cattle intended to be fed the ensuing winter, are generally taken to better grass the latter part of summer, and are
stall-

stall-fed in winter, on straw and turnips, or, for want of the latter, on hay or sainfoin; hay often, with the addition of linseed-cake, or bean-meal; and, if kept on until spring, are finished either with forward-seed grass, or in pastures reserved for the purpose: it is with this view, that most farmers wish to have some rye-grass in their new-laid pastures, on account of its early growth in the spring.

The system of stall-feeding is carried to no great extent in this Riding, nor is it supposed to be here perfectly understood: it is found practised only by some of the great farmers.

Management of Cows for the Dairy.—Milk-cows are always allowed the best pastures during summer, and are usually housed about Martinmas, when their food is generally turnips and straw, or, where turnips are not cultivated, hay is given them; but a difference is made between those cows which are rather fresh of milk, and those which are nearly dry; the former being indulged with a larger proportion of turnips, and frequently with the addition of hay, whilst the latter are put off with little but straw, until within a few weeks of their calving, when their food is improved. If hay is wholly used, three loads, of 120 stones each, are esteemed sufficient for a cow for the winter.

The time of turning out again to grass, is the first or second week in May.

The time of putting to the bull, is during the months of June, July, and August; consequently, their time of calving will be February, March, and April. The calves intended for the butcher, are kept about five or six weeks, and are allowed, by most farmers, to suck during that time; but a few serve them with new milk out of a pail.

The average quantity of milk given by a dairy of cows, is about seven quarts per cow, twice in the day; but some cows have been known to give twelve or fourteen quarts.

They are expected to be dry about six weeks before calving; but some are much longer, sometimes twelve weeks.

The average quantity of butter per cow, per annum, is about three firkins, of fifty-six pounds each, and of old-milk cheese, about two hundred weight.

The butter is mostly put into firkins, containing fifty-six pounds each, and is sold to the factors, who ship it for the London, and other markets.

The price of the firkin is 1s. 6d. and the weight of it from seven to eleven pounds. An act of parliament, passed about two years since, directs, That the firkin shall be marked by the maker, with his name and parish on the bottom, and marked by the dairy-man, with his name on the inside of the bottom, and on the top of the butter; the outside of the top of the firkin, and the belly of it, each to be marked with the name of the dairy-man, and also the gross weight of the firkin.

In a dairy of ten cows, about four pigs are fatted, to be killed in the fore part of winter; and after those, two smaller ones, which are killed towards spring; and two or three calves are reared.

Disposal of surplus Cattle.—For some years past, the Tees-water cows have been growing into repute, as milk-cows, at London, and in several of the southern counties; on which account, great numbers of in-calvers, within a month or six weeks of calving, are now bought up in the vale of York, Ryedale, and the Howardian hills, for the supply of those parts, at a price of from 14*l.* to 18*l.* each.

The draught-oxen, and some young oxen, are bought by the graziers of Lincolnshire, and other counties bordering thereon, where they are fed, and finally go to Smithfield.

The

The surplus of fat cattle in the west part of the Riding, is driven to Skipton, Wakefield, or Rotherham markets, where they are bought for the supply of the West Riding and Lancashire; that of the eastern part of the Riding, is driven to York, where a market for cattle is held every fortnight, and where the butchers from the West Riding attend.

There is a ready demand for all the fat cattle reared in this Riding.

Disorders.—A complaint very prevalent amongst calves, when a year old, is called the quarter ill, or quarter evil, for which no remedy is yet known. The calves are first seized in one quarter, and are lame; the skin puffs up, and, on touching, rattles; after which, it is very rare for them to live twelve hours—but they die within that time of a mortification.

The short-horned cows, in consequence of the great quantity of milk they give, when put to feed, part with their milk with greater difficulty; and it is more apt to return, it is thought, when they improve in condition, than in cows of most other breeds: this, without great attention, and good management, causes a wedged, and frequently a ruptured udder, by which many weeks, perhaps a season, may be lost—no trifling object to the grazier. Many remedies are applied, which it is perfectly unnecessary to detail; that which appears most successful, is to bleed the cow, as soon as a suspicion arises that she is likely to suffer any inconvenience from her milk, and to administer an ounce, or more, of saltpetre dissolved in water, daily, for some time. The penetrating nature of this salt is well understood, and the property it has, of preventing the coagulation of milk, and of separating that which is coagulated. Soon after this salt has been taken, the milk

will either disperse of its own accord, or be easily drawn off, in a consistence not thicker than water.

Another medicine, which is said to be very efficacious in this disease, is two ounces of white soap, dissolved in three pints of water.

In other respects, the short-horned cattle are an healthy race, not generally liable to diseases.

SECT. II.—SHEEP.

THE sheep of the old stock of the northern part of the vale of York, and of Cleveland, generally called Tees-water sheep, are very large, coarse boned, slow feeders, and the wool dry and harsh: they feed to from thirty to forty pounds per quarter*, at three years old; and a few have been fed above that weight, and produce ten or eleven pounds of wool each; but, of late years, the stocks of very many of the breeders have undergone a great change, and been much improved by the use of rams of the Dishley and Northumberland breed, which have considerably reduced the bone and offal, improved the wool in quality, and the mutton also, which is much finer grained than of the old breed, and fatter, at two years old, than the other at three. The wethers of this improved breed, are generally sold at two years old, before they are shorn, at from 45s. to 55s.

* Mr. HUTCHINSON, of Smeaton, had a wether some years ago, which weighed above sixty pounds per quarter.—*E. Cleaver.*

A wether rising three years old, bred by W. POWLEY, of Thornton-Steward, was killed at Leyburn, in January, 1799, the four quarters of which, weighed sixteen stones eleven pounds; near fifty-nine pounds per quarter; tallow, one stone eight pounds and a half: he cut six inches thick of fat on the rib, and four inches three quarters on the rump.—*J. T.*

each,

each, and weigh from twenty-four to thirty pounds per quarter. The fleeces of these sheep, weigh from six to ten pounds each; the average price of which, in the year 1798, was about 10s. 9d. per stone, of sixteen pounds each.

This improvement in the breed of sheep, extends betwixt the Swale and the Western Moorlands, as far south as the West Riding; but it is not yet so general in the southern part of the vale as the northern.

In that part of the vale of York, east of the river Swale, scarce any attention is paid to the improvement of sheep, except by a very few individuals; indeed, not many sheep are bred. Three or four different breeds may frequently be found in one farmer's stock; and one would think, from their appearance, that considerable pains had been taken to select the refuse of the several countries from which they have been brought. As a proof of the want of a proper spirit for improvement, the common purchase-price of a ram to ride a stock of ewes, is from one guinea to about three guineas, the latter being esteemed a very great price.

In Cleveland, Lord DUNDAS has crossed, for some years past, his ewes of the Lincolnshire breed, with rams of the Dishley blood: his stock is now very valuable, both for wool and carcase*. Except at Upleatham, the Dishley blood has made but little way in Cleveland, the farmers being closely attached to their old breed; but some, by putting a Tees-water ram to ewes of the Eastern Moorlands, have produced a stock better adapted to poor land than the Tees-water breed: they, however, fall far short in the valuable properties of the improved breed of the vale of York.

* Lord DUNDAS bred from the stock of Mrs. TAYLOR, of Salton, which is excellent.—*E. Cleaver.*

The sheep of Ryedale, the Marishes, and the Howardian hills, some years since possessed much of the Lincolnshire blood, with a mixture of the Tees-water and Northumberland; and, in some stocks, some remains of those breeds are still to be seen. The original breed of the dale, improved by those crosses, in this state, are rather slow feeders; are light forward, have the chine narrow, the wool strong and heavy, and pelts thick; but, through the great spirit and judgment of several of the breeders, the stock of the country is rapidly improving, by the introduction of the Dishley blood into them*. This improved breed is about the same size, but produces rather more wool, though much of the same quality as that of the vale of York.

There is also another variety of sheep in this district, which appear to have been originally of the wolds breed: these are kept upon swarth commons: they have white faces, rather strong wool, and will weigh, when fat, about seventeen pounds per quarter.

A few sheep are bred on the higher inclosed lands of the dales in the Western Moorlands, which are mostly white-faced, with horns, and of a very different appearance from any others in this county: they seem to be an unmixed breed; they are slow feeders, and will weigh, when three years old, and fat, about eighteen or twenty pounds per quarter, and produce about five pounds of dry, harsh and thick-set, but on some sheep, and on some parts of most of

* We have been endeavouring for sixteen or seventeen years, to get as much Leicestershire as we can. The first cross I made, with a mixture between the Tees-water and Leicestershire, advanced my stock 12s. per head in one year, besides getting them all off together without a cull, six weeks sooner than those bred from the Lincolnshire sort, which were all bred and fed together, without any preference in superior keeping. My half-bred Leicestershire sheep were sold at 45s. the other at 32s. when shearlings.—*E. Cleaver.*

the sheep; very fine wool. The whole of this wool is worked up into the hosiery, for which the dales of these Moorlands has long been so celebrated; and on it, much of the reputation of this manufacture depends.

The sheep which are bred upon the heights of the Western Moorlands, are horned; have grey faces and legs, and many of them a black spot on the back of the neck, and wool rather coarse and open. It is usual to sell the wethers of this breed off the moors, when rising four years old, at about 16s. or 18s. each, which, when well fed, the ensuing winter and spring, will weigh about sixteen pounds per quarter; but the principal part of the sheep on the western moors, are short Scots (so called in opposition to a larger breed of Scotch sheep, called long Scots), which are bought about Midsummer, and are usually sold off again in the wane of that summer, or the summer following.

The breed of sheep on the Eastern Moorlands, have horns, and black or mottled faces and legs; are small, and very hardy, suitable to their pasture, and the climate they inhabit; their wool is open, loose, and coarser than of those bred on the Western Moorlands; they are rather less in size, and sell, when rising four years old, at about 12s. or 14s. each, and, after being well fed, will weigh about fourteen pounds per quarter*.

The fleeces of the sheep of both the Moorlands, average from three to four pounds each; and much of it being of a very coarse quality, some not much better than goats' hair, and frequently much mixed with brown or grey hairs, it does not fetch an higher price than 7s. per stone, of sixteen pounds to the stone.

* The moor sheep are nearly as good as the soil and climate will admit.—
E. Cleaver.

Thus has been traced out, three perfectly distinct breeds of sheep in this Riding: the large, white-faced, hornless, long-woolled sheep, variously mixed with crosses of the same breed, and forming several varieties, according to those crosses; this breed occupies all the low-land, rich cultivated tracts of this Riding, and is probably much more numerous than the others.

The next, an unmixed race, and second, in point of number, are the horned—black, or speckle-faced and legged, coarse and short-woolled sheep: this hardy race possess, exclusively, the summits of all the Moorlands; little alteration is likely to take place in this breed; as long as the wilds on which they now range, remain, they will remain. In point of carcase, many of them are well made; and their mutton is not surpassed, when of a proper age, by that of any breed of sheep in the kingdom.

The third race, by far less numerous than the others, in this Riding, but extending themselves considerably into the adjoining parts of the West Riding, occupy a middle region, the grassy summits of the calcareous hills, and higher inclosed lands of the Western Moorlands: these are a pure unmixed race, very different from any others in this part of the kingdom, but not altogether unlike the sheep of the downs in Wiltshire: they have heavy horns; almost always white faces; white and long legs, long neck, and, in general, a thin flat carcase; are a hardy race, and have probably been chiefly encouraged for the sake of their wool, in a country where a local and peculiar manufacture is carried on, to which it is peculiarly adapted.

Feed.—The best and the largest breed of sheep, are supported in summer on seed-grass (white clover and trefoil, with often a mixture of rye-grass), or, on old pastures, fog, second crop of red clover, or sainfoin, and, towards autumn,

lunn, are frequently kept on rape, sown on the fallows for wheat, for that purpose. The winter-feed is turnips, except that the ewes intended to lamb, are frequently kept on the grass-land. In the spring, good shepherds always take care to have either some saved grass, forward seed-grass, or stubbles sown down with rape, rye, or tares, for their support, until the grass grows.

The stock of the swarth-commons, are generally wintered in the inferior pastures, or stubbles, and, in spring, are again turned on to the commons.

There are many sheep kept the whole year without any assistance from arable land, and thrive well.

The Moorland sheep are wholly supported on the Moorlands, except that, during the time of their tugging, and sometimes of lambing, they are brought within the inclosed land. When the ground is covered with snow, a man will take a horse and ride about on the moors, to make tracks, in which the sheep will follow, and scratch through the snow to the heath; and some will draw a harrow along, for the same purpose*.

These sheep, while remaining on their own hills, rarely suffer under the rot, and experience little inconvenience from the attack of the fly; the last privilege, they seem to retain, but the first, to forfeit in a very short time, when brought down to feed in the rich pastures of the low country.

No folding of sheep is practised in the Riding, for the purpose of making them *carriers of dung to land in tillage*, nor any folding practised, except what may be necessary for confining sheep on turnips.

* Moor, or heath-going sheep, in the dales of Cumberland, are very frequently fed on the leaves of hollies, during the severe storms of snow. If hollies were planted in the hedges or waste grounds in the North Riding moors, would not the sheep-owners find much advantage in it? In severe snows, hollies make a fine shelter for all kinds of cattle. — J. Smadlie.

Breeding and Rearing.—The ram is put to the ewes of the better breeds, in the last week in September, or during the two following weeks, according to the prospect the farmer has of spring feed; to the swarth-common ewes, the tup is put something later, and to the Moorland sheep in November.

The greater condition the ewes are in at the time of being put to the tup, the greater is thought the probability of their breeding twins; on which account, the breeders generally endeavour to have them forward in condition at that time. The most attentive breeders keep their ewes well, for two or three weeks before the time of lambing, in order to give them a flush of milk at that time.

The tup-lambs are gelt at about two weeks old, if the weather is moderate, but if otherwise, it is deferred until it is suitable; at the same time, the tails are cut to about three inches long, which makes them keep cleaner, in case of scouring; and the bleeding occasioned thereby, is thought to be a means of preserving them from the crook.

The lambs are allowed to suck until about Midsummer, when they are separated from the ewes, and put to the best keeping the breeder has at the time*.

Washing,

* An alteration of late has taken place in the sheep stock, as great as in the system under which that stock is now managed. There is reason to believe, that formerly wool produced in this country was much finer than at present, being mostly, at that time, what is called short or carding wool, adapted to the manufacture of cloth. The manufacturer at length took the advantage of this liberal supply of the market, and refused any longer to pay an adequate price, under the plea, that the demand for stuffs manufactured of the long or combing wool had greatly increased, and that he would pay more amply for that sort of wool. Upon this, the farmer turned his attention entirely to producing quantity of wool upon the sheep, to the neglect of the carcass; for, at that time, he did not know how to unite the two, and supposed the first would be most profitable to him. In a few years, the market being supplied with this new kind of wool, the manufacturer again took advantage of the farmer, and refused him any longer the usual price for it; though there is reason to believe, that the price hitherto paid, had not been sufficient to reimburse the farmer for the

Washing, Shearing, &c.—Fat sheep are generally washed and shorn near a fortnight before holding stock: the fore part of May, if a fine day offers, is chosen for the former, and they are shorn in about ten days or a fortnight after; about which time, the latter are washed.

the high keeping with which the growth of this wool had been forced; besides, as the manufacturer possessed the strictest monopoly, and prevented the grower from the possibility of obtaining another market, he knew that the farmer must at last come down to his own terms, should he refuse to sell at the time. In this situation, without a price for his wool, without a market, and with much of it on his hands, the farmer applied to parliament for redress; but in vain. He was told, that the prosperity of his country depended upon the woollen manufacture; that no country could grow such wool as England; and that, therefore, as long as we kept the wool for our own use, so long we should preserve the manufacture to ourselves; and that no innovation must be made in a system so long established. He attempted to controvert these assertions, and offered to produce proof, that a bounty of at least one million a year, was most unjustly paid by the farmer to the manufacturer, to enable him to carry on his business, and meet with English cloth, the foreign manufacture in the foreign market; because, in consequence of this close monopoly, he, the farmer, was obliged to sell him his wool to that amount below what he should receive for it at an open market, and that, therefore, there was not that merit in our wool, and our manufacture, which the manufacturer boasted of. The farmer, however, was not attended to; and he was left to redress himself as well as he could. This he has done under the present system of sheep-farming. From that period, his whole attention has been turned to the carcase of the sheep; and the wool has been held of a secondary consideration. The consequence of this has been, that, a few years since, wool was of an higher price than at any former period, and at this time, is much higher than it otherwise would have been: the price is great, because less is produced than formerly. Let the friend of monopoly then learn, *that to have an article cheap, he must have it plentiful, and to have it plentiful, there must be no restraint; but the grower and the consumer must meet on equal terms; the market must be free to both.* Whenever the blessings of peace arrive, the price will be greater than it ever has been; because the demand will probably be increased, and the produce will continue to diminish. A person, the most eminent of all others for the improvement of the breed of cattle, has been heard to say, that one thing only was wanting to ensure him an ample fortune—the discovery of a *breed of sheep without wool*. This sentiment, without being taken in its full latitude, has been for some years acted upon, considerably to the advantage of the farmer; and, derived from such high authority, aided by the test of experience, the influence of it continues to extend; for it is no longer a matter of doubt, that the food consumed in feeding a large fleece, is not repaid by the sale of that fleece.—*W. S.*

Washing

Washing is always performed where there is a stream; if it be a small one, a hole is made to increase the depth; but a river is preferred, as it is less dirtied; the quantity of water being larger, and the stream quicker, whereby the fleece is got cleaner.

The sheep to be washed, are penned with "bars" (hurdles), close to the water's edge. One man is employed to hand them to two or three washers, who turn them out of the water on the opposite side of the pen, as they are finished.

A man will shear about sixteen large sheep, and near thirty Moorland sheep, per day—his wages, 2s. 6d. to 3s. The operation is by no means nicely performed on these long-woolled sheep, though, where show is an object, there are those who have the art to lessen redundancies of form by close and nice shearing, or fill up deficiencies, by leaving the necessary length of wool.

In this place, is to be noticed the operation of docking, annually performed upon the long-woolled sheep, particularly those which have been fed on turnips. As early in the spring as the weather will allow, careful shepherds begin to trim the hind parts of their sheep, according as each may require it, from the dirt which has accumulated upon them during the winter, and which, owing to the length of wool, is frequently so great as to impede their motion. The tails of all the sheep, and the udders of the ewes, are entirely freed from the wool; without it, the udders of the ewes would be so chafed and heated with the dung and urine, as to become sore; and the lambs would be unable, or would refuse to suck. These dockings, as they are called, are afterwards steeped in water, and, being washed, and freed from the dirt, afford a considerable quantity of coarse wool, which is collected for particular purposes of manufacture.

Salving.

Salving.—This practice in the management of sheep, prevails generally throughout the Riding, which is not known in the southern counties. The object of this operation, which is performed in the autumn, is to prevent the scab, and kill the ticks, which it accomplishes effectually: it is also thought to be nourishing to the sheep; to render them more capable of bearing the severities of winter; and to promote the growth of the wool.

The salve is made of tar, and butter of an inferior quality: these, upon the Moorlands, are mixed in equal proportions; but in the lower part of the country, in the proportion of one of tar to two of butter.

The tar being put into a tub sufficiently large to contain the salve, when made, is well stirred, until it becomes thinner, and acquires a light colour, when the butter, being melted over a slow fire, but not so as to make it hot, is poured amongst it: it is necessary to keep them well stirred during the time the mixture is cooling, in order more perfectly to incorporate the butter and tar. If the weather is warm, it is usual to put in some mutton-suet, to stiffen it.

The first proportion, discolours the wool in a great degree; but the injury to the wool, is reduced in proportion to the quantity of butter used in making the salve.

The business is performed in the following manner:

The man being provided with a piece of cord, the ends of which are tied together, he lays a sheep upon the creal (a trellised bench), and ties the hind-feet, by making a noose with the cord; the sheep's head is then put through the remainder of the cord, which, if the cord be a right length, holds the hind-feet pretty tight near the middle of the belly: the sheep is thus in a right position for the buttocks to be done. The man, being seated astride the smaller end of the creal, takes the hinder end of the sheep next him,

him, and makes a shed in the wool, beginning at the upper part of the thigh next to the tail, and proceeding with it to the first rib; he then takes a piece of salve, the size of a large hazle-nut, on his fore-finger, and, beginning at the farthest end of the shed, makes a line of the salve upon the surface of the skin, by drawing his finger towards him, driving the spare salve in a round pellet before his finger, until he has used it all; when that shed is salved, he makes a second, parallel to the former, at the distance of about two inches nearer to the hock, and so proceeds, till both buttocks are done: the cord is then taken off the sheep's neck, tied to the far end of the creal, and the sheep turned on its belly; a shed is then made along the ridge from the head to the tail-end, which being salved, he proceeds to others, until he comes round to the ridge again.

About ten moderate-sized sheep, is a day's work for a man; and the expence of labour and salve for such sheep, is about 6d. each.

Though this is the practice of most of the breeders, yet there are some who do not adopt it, but use, in the place of it, a solution of soap in water, or a decoction of tobacco and broom; and some others do nothing at all*.

It

* I am pleased to find, that the practice that I suggested in note twelfth, in the Report of Berkshire, of washing sheep with soap and water, obtains in this district, as I think it likely to improve the wool, and preserve the health of the animal.—*W. Fox.*

Salving is comfortable to the animal, and may add weight to the wool, to make amends for the reduction of the price; but it is a practice many people do not like: it is not only tedious, but expensive, and disfigures the sheep. Many people use a solution of mercury and soap, and clip their lambs immediately after clipping their ewes, in order to destroy the tick. I have practised it some years with the utmost satisfaction; and it ought to be imitated throughout the kingdom, by all the sheep-breeders. My method is as follows: to every pound of mercury (arsenick) four pounds of sweet soap; boil these in water till dissolved; put the solution into twenty-seven or twenty-eight gallons of water; the quantity must be repeated in proportion to the number of lambs. Put some of the liquor into a large tub, in which two men should dip them up to the

the

It is a point desirable to be ascertained, whether the advantage derived from the practice of salving, is, or is not equal to the expence and inconveniencies attending the practice.

Diseases.—The sheep in many parts of this Riding, are subject to the rot, for the cure of which, no medicine has ever yet been found, though many have been tried; but from the following experiment, which I made in the winter of 1790 and 1791, it appears as if dry food, and shelter, would have beneficial effects.

In the autumn of the year 1790, I bought some ewes, which, on the approach of winter, proved to be rotten, and several died. I had eight of the worst of the remainder put into a large straw-yard amongst some beasts, where they got no other food than straw and water; the former they ate very freely, and soon improved in their appearance of health and condition; but one day, by some means they got into a field adjoining, where they continued some hours: from some unknown cause, possibly from the sharpness of the weather, or the grass they had eaten, some of them were so seized, that two died before they could be got back again into the straw-yard, and it was with difficulty that some of the others walked there, where one of them died a little while after: all of these, on inspection, proved to be very rotten; the others continued there till spring, and were in better condition than those which had remained in the field: they all brought good lambs, and fattened them well, and were afterwards fed themselves; and

the neck; then lay them on a creal, or bench, and press out so much of the liquor as they can, which should run into a tub set underneath to receive it. The ticks are all immediately destroyed; the animal, easy and comfortable, thrives well, and till much rain comes to wash off the smell, the fly is entirely kept off; when that is the case, we wash their backs again with the same. The expence of this operation is about 1s. each.—W. M.

when

when killed, it was sufficiently evident they had been infected with the complaint, and had recovered from it.

The foot-rot is a disorder which is not uncommon in this Riding: it generally comes on with a moisture betwixt the claws, of a very nauseous smell; if neglected, proud flesh soon grows, and the disorder penetrates under the hoof, when the sheep becomes extremely lame. This disorder is considered infectious; and when it once gets into a stock, if not taken timely care of, soon spreads itself, and is then found a very difficult disorder to exterminate.

The most certain remedy for this disorder, which I have met with, is, two ounces of blue vitriol, two ounces roach-alum, one ounce verdigrease, and a quarter of an ounce corrosive sublimate, all dissolved in one quart of double-distilled vinegar. This dropped on to the part affected, and the sheep's feet being kept dry for a few hours after, will generally effect a cure, after being repeated a few times.

There is another disorder to which lambs are liable in autumn; it is called the black-water: it generally attacks those lambs which are in the best condition, and causes a very sudden death.

For this disorder, I have not heard of any cure to be depended upon; but it is generally thought, that keeping the lambs in dry stubbles, and particularly where the grass is of a dry nature, is a good preventative.

Brooders.—There are several persons in this Riding who are professed ram-breeders, and are at a great expence to improve their stocks, by hiring rams of the Dishley breed, either from the counties of Leicester or Northumberland: from forty to 200 guineas the season, is given by several of them; and these let out the rams of their breed, mostly to those whose object is breeding wethers, at various prices,

prices, from five to fifteen guineas, except that a few of their prime rams may be lett to other ram-breeders, as high as forty or fifty guineas.

The principal ram-breeders in the vale of York, are, **NEWBY**, of West Thorp; **BELL**, of Dalton; **BARKER**, of Layton; **ALLISON**, near Layton; **SHIPMAN**, near Forcett; **BROWN**, of Aldborough; **ROBINSON**, of Breconby; **CHARGE**, of Newton; **WRIGHT**, of Cleasby; **MAYNARD**, of Ereyholme; and **BOOTH**, of Kellerby.

Those in Ryedale, and the eastern part of the Riding, are, **CLEAVER**, of Nunnington; **KENDAL**, of Ness; **TAYLOR**, of Salton; **DOWKER**, of Salton; **KEY**, of North Holme; **WRIGHT**, of South Holme; **TAYLOR**, of Whitwell; and **WHITEHOUSE**, of Foston.

SECT. III.—HORSES.

YORKSHIRE has long been famed for its breed of horses, and particularly this Riding, in almost every part of which, considerable numbers are still bred; the prevailing species of which, are those adapted to the coach and the saddle.

In the northern part of the vale of York, the breed has got too light in bone, for the use of the farmers, by the introduction of too much of the racing blood; but the most valuable horses for the saddle, and some coach-horses, are there bred.

In Cleveland, the horses are fuller of bone than those last described; they are clean, well made, very strong and active, and are extremely well adapted to the coach and the plough.

In the southern part of the vale of York, the Howardian hills, Ryedale, and the Marishes, a greater mixture prevails, both of the black and the racing-blood, than in Cleveland; nevertheless, those districts produce a very considerable number of both coach and saddle-horses; but want of attention or judgment, or both, in the owners of mares, in not suiting them with proper stallions, evidently injures the breed*.

The dales of the Eastern Moorlands, and the coast, rear many horses, which are rather of a smaller breed than those before described, but are a hardy useful race, though generally too low for the coach.

Horses constitute a considerable part of the stock of the high parts of the Western Moorlands; the farmers there, generally keep a few Scotch galloways, which they put to stallions of the country, and produce an hardy and very strong race, in proportion to their size, which are chiefly sold into the manufacturing part of the West Riding and Lancashire, to be employed in ordinary purposes†.

Some large farmers in the vale of York, and in Ryedale, do not breed many horses, but buy colts when two or three years old, which they keep until four or five, using them for the purposes of the farm; they are then sold, and generally to the London dealers. By this annual practice, their stock is kept up; and they get a considerable profit yearly by the horses, which perform the internal business of the farm: they are chiefly used at the plough, and frequently not shod till finally parted with; as they are

* The farmer should keep his best mares for breeding; but, for the sake of two or three guineas, he sells his best, and breeds from his worst.—*Anonymous.*

† Before the war, mules were well worth attending to, as to the breed, the West Indies being the market; a two-year old giving from 7l. to 10l.: they are quitted earlier, and at a better price, than what these Scotch galloways and the horse produce.—*Anonymous.*

designed for the coach, this kind of gentle work is of service to them, rendering them quiet and docile, and used to the harness.

The farmers who breed horses, generally breed from those mares which are employed in the business of the farm: these are often worked until the very time of foaling, after which, they have usually two or three weeks rest, before they are again taken to work; the foal, during the time the dam is working, especially whilst it is young, is shut up in a stable; and it is the practice of some, before she is suffered to go to the foal, after returning from work, to bathe her udder with cold water, and to draw most of the milk from it, to prevent the milk, which may have been heated by labour, from having any hurtful effect upon the foal. Some continue this practice as long as the foal sucks; others, after the foal has got sufficient strength to travel along with the mare, take it along with her into the fields, and frequently suffer it to suck, from an opinion, that by the milk being frequently drawn, less danger arises of its being heated, or of possessing any quality prejudicial to the foal.

The general time of foaling, is about May-day (from which day the age of all horses is reckoned), and that of weaning, about Michaelmas, when the foals are put into good after-grass, or the best pasture the farmer possesses: they remain there as long as the weather permits (if there be sufficient food), and, on the approach of winter, have a little good hay given them, where there is a stable, or hovel; that they can go into at their pleasure. The colts are usually gelded in the spring following, and in summer, are allowed only an inferior pasture; the next winter, they make their living in the fields, or in the straw-yard, except they are intended to work in the spring, which is frequently expected of those of a strong kind: such are

rather better kept as the time of labour draws nigh, and are only put to light and easy work, and generally work only half a day at once.

Some keep their colts a year longer, before the operation is performed, and find that such become the stronger and handsomer horses. The foal always receives a great check by being weaned, which it does not well recover before it gets the fresh pasture of the following summer. The foals which are gelded at one year old, receive a second check, at the very time they should begin to recover from the first; whereas, at two years old, they appear to be in the best condition for the operation, and recover at least as well as at one year old, and are much improved by the keeping of the preceding year.

Many of the breeders sell their colts in autumn, when rising three years old; but others keep them a year, and some two years longer, working them until two or three months before the time of selling them*.

Making up for Sale.—The method practised by the farmers, in making up their two-year old colts for sale in autumn, is to give them good grass, and only take them up about a week before the time of sale, in order to reduce their carcase, improve their coats, and teach them to lead; they are usually sold with their full tails, to dealers, who afterwards make them up more according to art. The first business, is to draw their corner teeth, in order to make three and four-year old horses have the mouths of those of five; they also undergo the operations of docking and nicking; and after having been kept for two or three months on mashes made of bran, ground oats, or boiled corn, they are sold to the London dealers, who, it is said,

* I am fully persuaded, that many farmers injure themselves by breeding horses, particularly by breeding indifferent ones: they cannot easily stock their farms with a more precarious and unprofitable stock.—*J. Smeddle.*

sell those three or four-year old horses as if they were five years old; they are then taken into immediate work, either for the coach or saddle; and in a few months, many of them are completely destroyed by this premature and too severe labour.

This drawing the teeth, is not a fraud practised upon the London dealers; they know the deception, and insist upon its being done by the country dealers. It is requisite to be done some months before the London dealers finally sell them for use, or the tooth which denotes a horse to be five years old, would not be grown; consequently the deception could not have taken place.

Exportation of Horses.—The horses which are sold for the London market, if for the carriage, are chiefly bay geldings, with but little white on their legs and faces: those which have much white, with chesnut, roan, and other unusually coloured horses and mares, generally do not bear an equal price in the London market, but with other slight and undersized horses, are more sought after by foreigners, and eagerly purchased by them for exportation; or are exported by people of this country, who carry them to the foreign markets, and ultimately obtain a price equal to that obtained for those sold at home: by these means, the exportation, contrary to an usually received, but ill-founded opinion, has a strong tendency to reduce the price of those horses which are calculated for the home market; and since as many fillies as colts are naturally bred, and one-third of the colts at least, will either have too much white for the home market, or be of some other colour than that which is fashionable at the time, if the breeder had not a market for those, which appear to be two-thirds at least of all he unavoidably breeds, he would be compelled to put such a price upon the one-third which happened to suit the home market, or variable taste of the

moment, as would pay for the other two-thirds; which last would either be unsaleable, or fetch very inadequate prices. The consequence naturally flowing from this would be, that the price of horses used at home, would be far greater than at present, when a foreign demand procures to the breeder, nearly as good a price for the horses that would otherwise be useless and unsaleable, as for those which are valued at home,

Comparative Expence and Profit of Oxen and Horses, as used in Husbandry.—The use of oxen, as beasts of draught, in the district under survey, having already been noticed, it remains only to draw a comparison between the expences of each, as accurately as the nature of the subject will admit, where no particular attention has been paid to it, or experiments actually made with that view. Under a system already noticed, adopted by some farmers, of cultivating their farms, in whole or in great degree, with young horses, purchased during their growth, and worked till they arrive at maturity, and then sold, the horse-team will be found to prove the most profitable; but this mode of management can only be of a limited nature, and therefore can weigh little on either side of the question. To farmers who keep blemished, aged, or any horses meant to be worn out upon the farm, the ox-team will have the advantage, and to the public it will be by far the most beneficial.

The two following modes of stating the two systems, do not appear far removed from the truth:

Horse-Team, for one Year.

DEBTOR.

One three-year old horse, - -	14	0	0
One four-year old horse, - -	18	0	0
Hay, or grass, for two horses, at 4s. per week each, for fifty-two weeks, -	20	16	0
Corn for ditto, 200 days, at one peck and a half each day—nine quarters three bushels, at 18s. per quarter, -	8	8	9
One year's interest of the first cost of the horses, - -	1	12	0
Shoeing, - -	1	5	0
Profit, - -	18	8	3
	£	82	10 0

CREDITOR.

By labour 200 days in the year, supposing them to plough one acre one rood per day, which, at 5s. per acre, is 6s. 3d. per day, but deducting 2s. per day for the man's wages—their labour will be 4s. 3d. per day, - -	42	10	0
The improved value of the four-year old horse, - -	18	0	0
A five-year old horse, sold for -	22	0	0
	£	82	10 0

HORSES.**Ox-Team.****DEBTOR.**

	£.	s.	d.
A pair of four-year old oxen, -	22	0	0
Hay, or grass, for ditto, fifty-two weeks, at 3s. each, -	15	12	0
Interest of the first cost of the oxen, -	1	2	0
Profit, -	16	6	0
	<u>£. 55</u>	<u>0</u>	<u>0</u>

CREDITOR.

By labour 200 days, supposing them to plough one acre per day, which, at 5s. per acre, is 5s. per day, but deducting 2s. per day for the man's wages—their labour will be 3s. per day, -	30	0	0
Suppose the oxen are worked two years, the value of them at six years old, would be about 28l. which makes the improved value, in one year, -	25	0	0
	<u>£. 55</u>	<u>0</u>	<u>0</u>

Horse-Team.**DEBTOR.**

By wear and tear of two horses, value 30l. supposing them to last ten years, -	3	0	0
To interest of prime cost, -	1	10	0
Hay and grass, -	20	16	0
Corn, -	8	8	9
Shoeing and farrying, -	1	5	0
Profit, -	7	12	3
	<u>£. 42</u>	<u>12</u>	<u>0</u>

CRE-

HORSES.

281

CREDITOR.

	£.	s.	d.
By value of their labour,	42	10	0
By value of their skins, 20s.	0	2	0
	<u>42</u>	<u>12</u>	<u>0</u>

Ox-Team.

DEBTOR.

Interest of prime cost of a pair of four-year old oxen, value 22l.	-	-	1	2	0
Hay, or grass, for ditto,	-	-	15	12	0
Risk and accidents,	-	-	0	10	0
Profit,	-	-	13	16	0
			<u>31</u>	<u>0</u>	<u>0</u>

CREDITOR.

By value of their labour,	-	30	0	0
Supposing them worked six years, the value of them would be then 28l. bearing an annual profit of	-	1	0	0

£. 31. 0. 0

The profit of two oxen working one year, is 13 16 0

Ditto, of two horses, 7 12 3

6 3 9

But as you must keep one-fourth more oxen to do the work of two horses, the profit of working your farm with oxen, would be one-fourth more,

3 9 0

If, therefore, the labour which required two horses to perform it, were performed with oxen, the profit of the oxen would be greater than the profit of the horses, by

£. 9 12 9

Thus,

Thus, four horses working upon a farm, do not appear to leave as much profit, by this last mode of cultivating it, as five oxen would, by the sum of 19l. 5s. 6d. while the former mode of cultivating it by horses, would leave a profit of four guineas in favour of the horses; the balance, therefore, on the whole, is in favour of the oxen, by the sum of 15l. 1s. 6d.

SECT. IV.—PIGS.

THE breed of pigs, which prevails throughout the North Riding, has little to recommend it: they are chiefly of the old long-eared kind, with long legs, high narrow backs, and low shoulders; they are very slow feeders, and require good meat to keep them even in tolerable condition. A few individuals keep the Chinese kind, and also a good breed of the Berkshire sort; both which are much more kindly feeders than the first. In Ryedale, the Chinese breed are gaining ground, through the liberality of a gentlewoman lately resident in that neighbourhood, who, possessed of two or three excellent sows, has distributed several of their produce, both male and female, in the neighbourhood: they are larger than most of the Chinese breed I have seen; the old sow, as she ran about, would weigh sixteen or seventeen stones.

J. DOWKER, of Salton, has also an excellent breed of pigs, between the Chinese and Berkshire: they are deep and thick-bodied, well made, and are excellent feeders.

SECT. V.—RABBITS.

A FEW rabbit-warrens are met with on the detached moors, and also on the skirts of the higher moors; but they are not to that extent, as to make them an object of attention in this survey*.

The species are the common grey, except the stock on a warren at Nappa, in Wensley-dale, of about 150 or 200 acres, which consists of silver greys, and is the only warren which has come within the knowledge of the Surveyor, entirely stocked with this species: they are said to have been brought some years since from a warren in Lincolnshire, whither they had been originally brought from Ireland: the skins of this species, are worth double those of the greys; they are not used for felts, as the last, but dressed as furs, and ultimately exported in that state to China, there to be worn by the principal people.

SECT. VI. AND VII.—POULTRY AND PIGEONS.

UNDER these heads, nothing worthy of notice occurs, neither are they particularly plentiful in this Riding, or have had any particular attention paid to them.

* Three only are of any considerable extent; one, which has lately been planted at Lockton, containing between four and five hundred acres, and two others, somewhat larger, at Low and High Dalby, about two or three miles distant from the first; all three are in the neighbourhood of Pickering, the two last forming part of the possessions of the Duchy of Lancaster.—J. T.

SECT. VIII.—BEES.

THERE are many considerable stocks of bees kept in the dales, particularly in those of the Eastern Moorlands. Bees are extremely fond of ling, *erica vulgaris*, &c. and may be seen traversing the heaths in quest of honey, where the bloom is abundant, several miles from any hive or place of shelter: the honey so collected, is of an high colour, a strong, but peculiar flavour, of which many people are fond; it is therefore much sought after, and in the metropolis sells at an high price. This honey, upon being kept, does not candy into an uniform mass, like other honey, but separates into two substances, forming lumps resembling sugar-candy, and a liquid of not much greater consistence than water.

On account of the season for the bees to collect honey, being a month or six weeks earlier in the cultivated parts of the country, than on the Moorlands, many owners of bees, who reside within a few miles of the moors, are induced to take the honey they have collected at home, as soon as the flowers which afforded it have done blowing, and then to send their bees unto the moors, to collect a fresh store for their own support during the winter. The hive being lifted from the stool, is closely tied up in a sheet, and being suspended on a pole, borne on the shoulders of two men, is thus carried to the place where the bees are to feed: when the season for collecting is over, or the autumn begins to advance, being again tied up in a sheet, the hive is returned, in like manner, to the place from whence it was originally removed; there to remain for the winter, or to deliver up the store that has been collected.

CHAPTER XIV.

RURAL ECONOMY.

SECT. I.—LABOUR.

AT the time of making the original survey, in the year 1793, the prices for day-labour were as under; but since that time, an advance of from twenty to twenty-five per cent. has generally taken place, arising partly from the great advance in the prices of the necessaries of life, between the autumn of 1794 and the autumn of 1796, but more from the great consumption of men in the navy and army, and consequent present extreme scarcity of hands for agricultural labour.

In the northern part of the vale of York, and in Cleveland, where the practice of letting work by the piece by no means prevails, wages were in winter, from 1s. to 1s. 2d. and in summer, from 1s. 6d. to 2s. per day, without meat.

In the southern part of the vale of York, where the practice of letting work is more frequent, wages ran from 1s. to 1s. 2d. per day in winter, and from 1s. 4d. to 1s. 8d. in summer, without meat; or from 9d. to 1s. per day in winter, and from 1s. to 1s. 6d. per day in summer, with meat. In that part between Easingwold and Thirsk, wages did not exceed 1s. per day in winter, and were from 1s. 2d. to 1s. 4d. in summer, without meat; but for mowing, from

7s. to 8s. per week, with meat; and in harvest, 1s. per day, with meat, or 1s. 6d. per day without, were the usual rates.

On the Howardian hills, the wages were from 10d. to 1s. per day in winter, and 1s. 6d. in summer, with meat; but at the western end of those hills, they were 1s. 2d. per day in winter, and from 1s. 4d. to 1s. 6d. in summer.

On the southern side of Ryedale, the wages were from 1s. 3d. to 1s. 8d. per day in winter, and from 2s. to 2s. 6d. in summer; but on the northern side, they were from 9d. to 1s. per day in winter, and 1s. 4d. in summer, with meat.

In the Marishes, 8d. per day in winter, and from 1s. to 1s. 6d. per day in summer, without meat, were the common wages.

In the Eastern Moorlands, wages were 8d. per day in winter, and 1s. in summer, with meat; but for mowing, 1s. 6d. with meat, except in the eastern part, where they were 1s. 3d. per day in winter, and 1s. 6d. in summer.

In the Western Moorlands, wages for husbandry-business, except mowing and hay-making, are scarcely established, there being very little employment of that nature, as the country is chiefly in grass. The wages given for mowing, were 1s. 6d. per day, and meat; for hay-making, 1s. per day, and meat. The miners have 1s. per day of three hours*.

Women's wages, throughout the Riding, were 6d. in winter, and 8d. per day in summer, except in harvest, when they had from 1s. to 2s. 6d. per day, according to emergencies of the season, and the qualifications of the individuals.

* It is now a custom to let work by measure, more than to pay for day's work: it encourages the industry of the poor man, and gives more satisfaction to the employer; and by this way do labourers procure a subsistence double to day's wages.—*Anonymous.*

LABOUR BY THE PIECE.—SERVANTS.

287

Hours of Labour.—The time of labour throughout the Riding, for men, is from day-light to dusk, in winter, and from six to six in summer; for women, from eight in the morning, to the same hour as the men, in the evening.

LABOUR BY THE PIECE, 1793.

	s.	d.	s.	d.
THRASHING wheat, per quarter, from 2	0	to 3	0	
oats, ditto,	1	0	1	2
barley, ditto,	1	3	2	0
Mowing grass, per acre, -	2	0	2	6
Mowing corn, including making the sheaves, setting up in stooks, and swathe-raking, ditto, -	4	0	5	0
Shearing, including making the sheaves, and setting them in stooks, ditto,	6	0	7	0
Shearing, and gaiting the great crops of oats, which are grown in Ryedale, ditto, - - -	8	0	10	0
Heading hedges, ditto (28 yards),	0	6	0	8
Laying hedges, ditto ditto,	1	0	1	6
Under-draining, per rood, -	0	6		
Dry-stone walling, in the western part of the Riding, made one yard and three quarters high, and coping above, per rood, -	2	0		

SERVANTS BY THE YEAR.

THE wages of course vary, according to the qualifications of the individuals, and the cultivation of the country.

In

In those parts where the country is chiefly arable, the wages are higher than where the country is chiefly in grass. In the Moorlands, in 1793, 12l. per annum was esteemed great wages for a head man, and 4l. and from that to 5l. per annum, was the same for a woman; but in the more cultivated parts of the Riding, 16l. for a head man, and 6l. or 7l. for a woman, were the common wages: since that period, the same rise has taken place as in labour by the day.

The time of changing servants, is invariably Martinmas.

Economy of Labourers.—Many of the labourers keep a pig, and some a cow*. Whether the latter be, in general, any advantage to them, in point of profit, is a matter of doubt, though it may be in that of comfort, and perhaps

* Where, from local circumstances, it is practicable, a gentleman who wishes to make his cottager comfortable, would find it to answer to himself, if he allotted for this purpose two fields of considerable and equal extent and value, to be left in common to a certain number of cottagers, to be pastured and meadowed alternately. Each field should be divided into distinct shares, ascertained by land-marks. The year the field is pastured, it should be in common; when meadowed, each man dungs and mows his own share, and the after-grass is stinted by mutual consent, and eat in common. The fields should be capable of feeding a cow for each man in summer, and affording hay for it in winter. Minute divisions of land, and multiplied hedges, would thus be saved, and the comfort of the cottager, and the interest of the landlord, better secured. The latter has only to make a rule, that if one falls in arrear, all the rest shall be deprived of their land, or answerable for the debt; they then assist each other, which would not happen if each cottager was unconnected; and should it be found advisable to desist from the plan, the fields are as fit as ever for a common farmer. It has been tried for seven years, and no cottager has been found a day in arrears. According to the number of the cottagers, and the size of the fields, two, four, six fields, and so on, may thus be appropriated.—*Anonymous.*

It would much conduce to the comfort of the labouring part of mankind, if the gentlemen of the North Riding would imitate, in this particular, the spirited conduct of C. MITCHELL, Esq. of Forcett-hall, who, from motives of humanity, has removed the poor people from the most wretched hovels, to habitations whose uniformity and economical conveniencies, can hardly be equalled; he has also most conveniently attached to them both gardens and cow-gates.—*J. Smeddle.*

health,

health; since labourers in the country are often worse supplied with milk, than the same class of people in the town. Farmers do not usually make the selling of milk an object of their attention, and are, in general, unwilling to part with it, except to their own labourers, as they make of it old-milk cheese, or maintain with it, their pigs or calves. Considered in different points of view, it might, on the whole, be an advantage to the labourer to have as much land as would enable him to keep a cow: habits of saving what would purchase the cow, are thus acquired; habits which might tend to his ultimate comfort; and a little capital might then be laid up, which, in some time of distress, might be highly serviceable.

SECT. II.—PROVISIONS.

The following were the prices of provisions at the several market-towns, about the end of the year 1793:

Winchester Measure.						
	Wheat per bu- shel.	Oats per bushel.	Barley per bu- shel.	Rye per bushel.	Beef per lb.	Mut- ton per lb.
	s. d.	s. d.	s. d.	s. d.	d.	d.
Reeth and Askrigge, Oatmeal, 1s. 8d. per peck,	6 6	3 3			3½	3½
Richmond,	6 0	3 0	4 0		3½	3½
Bedale, - - -	6 0	3 0	4 0		3½	3½
Leyburn, - - -	6 2	3 0			3½	3½
Middleham, - - -	6 2	3 0			3½	3½
North Allerton, - -	5 8	2 8	3 9	4 8½	3	3½
Thirsk, - - -	5 8	2 8	3 9	4 8½	3	3
Ripon, - - -	6 1	3 0	3 10½		3	3½
Easingwold, - - -	5 10	2 10	3 10½	4 7	3	3
York, - - -	6 1	3 0	4 3		3½	4
Butter at York, at 38s. 6d. per firkin, each 56 lbs.						
Skim-milk cheese at York, 3s. 3d. per stone (14 lbs.),						
Bacon at York, 6s. 3d. per stone (14 lbs.),						
Malton, - - -	5 10½	2 9	4 1		4½	4½
Kirby-moorside, - -	5 8	2 7			3	3½
Pickering, - - -	5 8				4	4½
Scarborough, - - -	5 8				3½	4
Whitby, - - -	5 8				4	4½
Guisborough, - - -	5 3				3	3½
Stokesley, - - -	5 3				3	3½

CLEVELAND.—New-milk cheese, 37s. to 42s. per cwt. (112 lbs.)

Butter, from 34s. to 38s. per firkin, of 56 lbs.

Turnips, 4l. 4s. per acre.

Hay, from 8d. to 10d. per stone, of 14 lbs.

Wool of the pasture-sheep, 8l. per pack (240 pounds),
or at 10s. 8d. per stone, of sixteen pounds each.

Western Moorlands sheep, 3l. 16s. per pack, or at
5s. 0½d. per stone, of sixteen pounds each.

Eastern Moorlands sheep, 3l. 12s. per pack, or at 4s. 9½d.
per stone, of sixteen pounds each.

The

The preceding were the prices of the best of each article. Wheat of an inferior quality, might be bought at 6d. or 3d. per bushel less, and shambles meat of that quality, at 1d. or 1½d. per pound under the above prices.

Shambles meat is always considerably dearer from the time that the turnips are consumed, to Midsummer, owing to the farmers in general not providing against that naturally scarce time; and it was that winter (1794) from 6d. to 1d. per pound lower than usual at that season of the year, on account of large numbers of half-fed cattle being killed, from an apprehension of a scarcity of hay, and from the diminished consumption of fat cattle in the manufacturing country, owing to the great stagnation of trade.

Corn also generally advances towards spring, and usually continues to rise until near harvest, unless kept down by importation.

The prices of oats and barley were remarkably high, owing chiefly to the unusual dryness of the summer of 1793, which caused in them a failure of crop. The price of oats in particular, might have been somewhat also increased, by the exportation of them for the use of the armies on the continent.

A large proportion of the oats produced in the North Riding, are consumed by the manufacturers in the West; and their great price may have been the means of increasing that of wheat, which, though an extraordinary crop the last summer (as it always is in this country, when the summer is dry), has been higher, by near 6d. per bushel, than what is usual in other years.

Butter and cheese then bore a greater price than common, because the drought of the preceding summer greatly diminished the produce of them, and increased the price of turnips and hay, the former being sold at the beginning

of winter in 1793, as high as six guineas per acre, even when eaten upon the land with sheep, though, on account of the mildness of the winter, the price fell before the end of the year to four guineas, and since that time to a still lower sum; while the price of hay, of late years, has usually been from 4d. to 5d. per stone, though it is this winter as high as 8d. or 10d. per stone.

The price of wool was then considerably lower than in the year 1792, when the manufactures were in so flourishing a situation, that long wool was sold at from 13s. to 14s. per stone (sixteen pounds) and was rapidly increasing in value till the commencement of the present war, since which it has declined to from 9s. to 10s. 6d. per stone, and is still declining.

The following were the prices of provisions at the several market-towns, about the end of the year 1798.

	Winchester Measure.					
	Wheat per bu- shel.	Oats per bushel.	Barley per bu- shel.	Rye per bushel.	Beef per lb.	Mut- ton per lb.
	s. d.	s. d.	s. d.	s. d.	d.	d.
Richmond, -					5	5½
Leyburn, -	6 10	3 0			4½	4
Thirsk, -	6 0	2 8	3 6	4 0	5	5
York, -	5 6	2 10	3 8	3 1½	5	5
Butter, at 40s. per firkin, of 56 lbs.						
Skim-milk cheese, at 3s. 4d. per stone, of 14 lbs.						
Bacon, 5s. 9d. per stone, of 14 lbs.						
Malton, -	4 10	2 6	3 6		5	5
In Cleveland, -	6 0	2 6			5½	5½

New-milk cheese, at from 40s. to 44s. per cwt. (112 lbs.)

Butter, 38s. to 42s. per firkin (56 lbs.)

Wensley-dale new-milk cheese, 47s. per cwt.

In the years 1794, 1795, and 1796, the prices of provisions rose to an alarming height. At Richmond and Leyburn market, there were instances of wheat being sold

sold at 24s. per bushel. At most of the market-towns, it was sold at 21s. or upwards; oats, 40s. per quarter; beef, 8d. per pound; mutton, 7d. per pound; and almost every other article of provisions in proportion. This great advance was attributed to two different causes, viz. monopoly, and scarcity. I make no hesitation in saying, that it principally proceeded from the latter; and yet it is more than probable, that the high price occasioned by that, caused a monopoly by many, and induced those farmers who had corn, to withhold it from market, in hopes of the price being still higher; but the generality of farmers certainly had very little corn, either in stacks or their granaries, and the monopoly was chiefly amongst the great corn-dealers.

SECT. III.—FUEL.

It already appears in chap. I. that this Riding does not abound in coals: those which are obtained, being of an ordinary quality, are only used in the neighbourhood of the pits, and there only partially, as in those situations either peat or turf is plentifully obtained, at a moderate expence, from the neighbouring moors; and these are more used there than coals: but coals are the prevailing fuel of the other parts of the Riding, with which it is supplied from the collieries in the county of Durham and the West Riding. The first are brought in one-horse carts, or on gallows, as far south as Thirsk; the last, come by water to York and to Malton, from whence they are carried into the country.

The price of coals at York—(per chaldron, of thirty-two bushels), £. s. d. 0 15 0

The price of coals at Malton, 0 17 0

Thirsk, 1 4 0

the pits in the Riding, 0 8 6

CHAPTER XV.

POLITICAL ECONOMY,

AS CONNECTED WITH, OR AFFECTING AGRICULTURE.

SECT. I.—ROADS.

Turnpike-Roads.—Some of the turnpike-roads in the North Riding are very good, and the rest, in general, in an improving state. Much has been done of late on some of them, particularly on that from York to Malton, by lowering the hills, straightening and widening it where necessary, and building bridges. Considerable pains are also bestowed upon some of the roads, in scraping them, which, as it causes them to dry more quickly, not only makes them last much longer, but at all times renders them pleasanter to the traveller, and lessens the draught of the carriage. On others, however, there is too much neglect in this respect, as well as in not filling up the ruts and holes as frequently and as soon as they are made*.

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* There seems to be a great oversight in parliament, in granting turnpike acts, before a sufficient sum of money has been advanced for making the road, and keeping it in repair. After the townships through which the road passes,

The tolls which have hitherto maintained the turnpike-roads, are no longer adequate to their intended purpose, not only on account of the increased price of late universally demanded for labour, but also on account of all that supply of materials being exhausted, within a reasonable distance of the roads, which used to be gathered from the surface of the ground, and which was always the cheapest in the first instance, and of the hardest and most durable quality. These circumstances affect turnpikes in general, but by no means have an influence equal to the exemption from tolls, granted to the mail-coaches which travel on some of them, and which have caused, in many instances, so great a defalcation from the revenue which ought to have arisen from them. In one instance, a mail-coach has been established, which has put down a stage that used to travel on the road, and the greatest part of the posting upon it. The interest paid upon the principal borrowed to make this road, has, during upwards of forty years, never exceeded 4l. per cent, and the revenue arising from it, with interest thus low, has not been equal to the liquidating of any material part of the principal; and the road must have gone to entire decay, had not the tolls, before heavy, been lately increased, by act of parliament, 50l. per cent.; and notwithstanding this increase, the interest must still remain at 4l. per cent. This indulgence granted to mail-coaches, deserves attention. The *plea of necessity*, so frequently and readily resorted to, cannot, perhaps, have contributed their share of the statute-work, it appears hard that they should pay a full toll, and still be subject to an indictment. I cannot help remarking, that about three years since, an act was passed for levying a toll on the north side of Sunderland bridge, for the purpose of lighting and paving Durham streets, which is the cause of much complaint. The public might, with equal propriety, be compelled to find the inhabitants of Durham with fire and candle.—*E. Cleaver, Esq.*

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haps, vindicate it, since the proprietors of mail-coaches reap a large profit.

The tolls of several of the turnpikes in this Riding have lately been doubled, and all will require a considerable increase when the present acts expire. Few pay an interest upon their debt of 5l. per cent. ; many of 4l. per cent. ; and some only 3l. per cent. : and it has not occurred to the Surveyor, that the trustees, in any instance, by having paid off their debt, in whole, or in part, have been able to lower the tolls under their direction.

Parochial Roads.—Some of the parochial roads in the vale of York are in a pretty good state ; though rough, yet sound ; but a great neglect prevails in the management of many of them. Some are stoned upon the natural surface of the ground, and the ditches on each side suffered to remain all winter brim-full of water, by which, roads in any country would be greatly injured ; but in this flat, and, in general, wet country, they are almost destroyed.

In that part of the vale betwixt the western end of the Howardian hills, and the rivers Ure and Ouse, the parochial roads are generally in a bad state, no good materials being to be met with in the neighbourhood ; and this is greatly increased by a neglect, which almost universally prevails, of not laying a small quantity of spare materials on the sides of the roads, to repair any bad place as soon as it is made ; in consequence of which, much additional labour is required at the future repair.

At Tollerton, in the last-mentioned district, the assessments for the highways amount frequently to 9d. in the pound real rent, besides statute-duty.

The parochial roads on the Howardian hills are generally made too narrow, and steep at the sides, and are very rough, the stones not being sufficiently broken.

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In the lower part of Ryedale, and the Marishes, the parochial roads are in as bad a state as possible: good materials are scarce in some parts of these districts, but care and attention, much more so in them all. Many of these roads are upon the natural soil, and in winter not passable without great danger and difficulty, if passable at all. No part of England produces worse roads, either turnpike or parochial. This, however, may be in part attributed to many of these roads being repaired by tenure; a system which experience explodes. However adequate it might have been to its ends in former times, when there was little intercourse betwixt place and place, and roads consequently were little frequented or injured, it no longer answers its purpose; and magistrates and passengers now rather suffer a road to become impassable, than compel an individual to repair it, at an expence beyond his means, or amounting to his ruin. This now would be frequently the case; for however extensive the land liable to the repair, might formerly have been, it is, at this time, frequently reduced into a narrow stripe, on each, or at least on one side of the road, perhaps into the little tenement and garth of a cottager. Under these great changes of circumstances, where roads remain liable to repair by prescription, and the individual bound to repair, is unequal to the burden, the law ought to allow some redress; for he cannot perform an impossibility; and it is not desirable that any one should be ruined with performing even what is possible. Without this alteration of the law, many roads will long continue in a state almost impassable.

Several of the tunnels and bridges in this district, are also not sufficiently capacious to admit the water which, after heavy rains, comes down very suddenly from the neighbouring mountains, and lays some of the roads, for a considerable

siderable distance, so much under water, as to cause a very great inconvenience, if not danger to travellers.

The parochial roads along the coast are generally very narrow, steep and rough, too little attention being paid to breaking the stones.

Cleveland holds out an example highly worthy of being followed by every part of the nation. The roads may all be ranked in goodness with the foremost of those of that description, yet without any toll; the whole of the road from Thirsk to Stokesley, a distance of twenty miles, may be travelled; and also all the other roads through the district of Cleveland: they were a few years since put into complete repair, and are still maintained in the same state by voluntary subscriptions, and the statute-duty of the inhabitants.

These roads are not made wide, but are in an excellent form: the bed of the road is considerably raised above the natural surface on each side; the barrel is generally about five yards wide, and forms about the sixteenth part of a circle, the whole of which is stoned: this form just allows sufficient fall for the water to drain off, but is so nearly level, that the carriages are not confined to one track, and consequently the road lasts much longer than when laid in an high curve; considerable pains are also bestowed in keeping them clean scraped, and repairing them as soon as it is requisite.

The roads upon both the Moorlands are rough and hilly; those passing through and along the dales, particularly of the Eastern Moorlands, are very narrow and rough; but in the larger dales of the Western Moorlands, are in a pretty good state.

Over the Eastern Moorlands, between Kirby-moor-side and Egton, for eleven miles, a road has lately been cut; the earth is taken from the sides of the road, so that the
barrel

barrel is formed without any of it being thrown upon the crown, but it is laid in heaps on each side of the road, which enables the traveller more easily to trace the line of it during storms of snow, to which this dreary tract is so liable in winter.

This practice ought to be generally followed upon both the Moorlands, where snow in winter, and many extensive mosses, render travelling at all times dangerous to such strangers as are under the necessity of traversing them.

In the dales of both the Moorlands, some bridges are wanting across the streams, which showers raise in a very short time to an alarming height. Their great rapidity, and rough bottom, render them very dangerous to pass; and in the attempt, many men and horses have been lost.

The roads in the North Riding are almost wholly repaired by statute-duty, which is performed under the direction of two surveyors of the highways, appointed annually by the respective townships; but an exception is met with in a township on the north side of the Howardian hills, where the practice is, to employ a person by the year, to do all the carriage-work, and keep the roads in repair; the expence of which is raised by an assessment laid upon the inhabitants. This has not been long practised; but it is apprehended, that the roads are kept in better repair, at less expence and inconvenience to the farmers, than by the former method*.

It

* Some of the townships between Hovingham and Malton are contracted for by an undertaker; but the work is miserably done, and the plan does not appear to answer.—*E. Cleaver.*

A general surveyor, or surveyors, should be sent from some public office, to see all the roads widened, according to the directions of the highway act, that they might have the benefit of sun and air. The present mode, of referring this to casual observers, proves that the task is very partially and defectively performed.

Two horse-carts should be drawn by the horses abreast, as in coaches, &c. by which means they would be enabled to quarter or stride the ruts, which in time would

It is evident, that the existing laws for the repairing of the roads do not answer the purpose. Much the greater number of farmers, who serve the office of surveyor of roads, are entirely ignorant of the proper construction

would gradually diminish, to the no small accommodation of travellers, as well as ease to the farmers, the draught or team.—*J. Costobadie.*

Many excellent farms in quality, and large tracts of land needing great improvement, are rendered very troublesome to the occupier, owing to the badness of the private roads to them from the public road of the village; and the more the improvement prevails, of placing the farm-houses in their respective farms, the more will this inconvenience increase, which at this moment requires the aid of the legislature.

Whilst the habitations of the farmers are collected in villages, those private roads are not so much used or thought of, as must necessarily happen when the houses are erected in the farms: the private roads to these houses then become of serious concern; for instance, a gentleman has a large farm, with house and convenience upon it, perhaps a mile from the village, and half that distance from the public township road; the private part of the road to the farm lays over the fields of two or three of his neighbours, and is open, and those fields of a spongey or clayey nature, and, perhaps, under the plough; as soon as the autumnal rains set in, and during winter, when the produce, manures, &c. have to pass and repass, the road becomes almost impassable: he complains; his neighbours, with reluctance, do a little at the gateways, and then let him drag through the other parts of the fields as he can; and this, I apprehend, is all the remedy he can enforce at this day. I know not a more distressing circumstance, and greater check to the farmer's business, than this too common inconvenience; besides, in case of sale, the value of the land is greatly diminished.

I submit to the consideration of the Board, *if all private roads* leading over the grounds of other proprietors, to farms which are rated to the land-tax at 50*l.* per annum (or any other given sum), and upwards, should not be thrown to, and made and repaired by, the township, or to adopt some parliamentary remedy for this great grievance.—*W. G. Steele.*

However great the inconveniencies are at present attending private-occupation roads, yet I apprehend the last annotator's anticipation, of still greater existing, when farm-houses are more generally removed out of villages, and placed upon the farms, is without reason. The reverse will be the case. If the farm-house be situated in a village, and the land lie at a distance, the intermediate roads, whether private or public, must be much more used by the carriage of crops and manure, than if the house were placed upon the land, which would be the greatest relief to the roads of any thing that could be done, and is alone a sufficient reason for land-owners to consider of the propriety of removing the farm-houses and buildings on to the land: in many cases, the carriage is equal to half the rent.—*J. T.*

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and management of them. How then can they be good? That desirable object is scarcely to be looked for, until statute-duty is done away, and compounded for in money, and suitable persons are employed to have the management of so much road as will employ the whole of their time, and a sufficient salary allowed them for their trouble. The old proverb, of a "stich in time saving nine," is not more strongly verified in any instance, than in the repairs of roads; but in the present system, the statute-labour is usually performed about Midsummer, when as many more stones are spread on parts of the roads as are necessary; after this period, they are usually let alone until the season returns next year. The consequence of this is, that for the first six months the roads are scarcely passable, from the quantity of loose stones that lie scattered about; and for the remainder of the year the inconvenience is as great, from their being wrought into holes and ruts.

As general remarks, applicable to all the roads of the North Riding, both turnpike and parochial, it may be proper to observe, that in forming new roads, it is frequently the practice to cast them up in too high a ridge, and make them much too narrow; in consequence of which imperfect form, they are far less durable than they otherwise would be, were they on a true construction, that is, with a fall from the middle, only just sufficient to draw off the water: in their present state, no quarter can be taken, except that in the centre of the road, without danger of being overturned. Sufficient attention is rarely paid by surveyors to keeping down the hedges, by which the roads are kept wet, and are much injured, or to breaking the stones, many of which are of an extremely hard quality, and therefore will not grind down to an even surface without much wear. Many roads are, from this circumstance, little better than broken pavements. Surveyors have

have not yet found out, that one large stone fixed in the road, is sure to make a hole on each side of it, as the materials used will never unite with it.

In various inclosures that have been made, both under acts of parliament, and by individuals without that authority, no attention has been paid to the positive directions of the 13th of Geo. III. (the general turnpike and highway act), that no private way shall be made of less width than thirty feet, and no fence made within thirty feet of the centre of any turnpike-road. Individuals as well as commissioners, appear, by their acts, to be ignorant that such laws exist; so great is their neglect of them, and so great the injury the public experience from that neglect. In laying out roads, likewise, turnpike as well as private, little ingenuity is shewn in many instances in avoiding hills: instead of going round the foot of an hill, a straight line is carried over the summit; and instead of seeking a level round a hollow, one side is to be descended and the other climbed. Modern engineers, like those of the Romans, seem to have not yet found out, that a circular line passing from a given point of an hemisphere to the opposite point, is not longer when drawn on a level at the base, than when passing in a straight line over the summit; but they have not the same excuse for their ignorance, since the straight line afforded little inconvenience to a carriage scarcely bigger or heavier than a one-horse cart, but is an almost insurmountable obstacle to a modern broad-wheeled waggon. A striking instance of this want of attention, or knowledge, is exemplified in a turnpike-road carried across the moors, from Saltergate to Whitby, where, for above eight miles, the road is one continued steep ascent, or descent; the whole of which irregularities, it is said, might have been avoided, by laying out the road in a circuitous
but

but level line along the vallies to the west of the present line, and without materially, if at all, lengthening it.

County Bridges.—With the subject of roads, bridges are naturally connected. Perhaps in no district in the kingdom, of equal extent, are the bridges maintained by the Riding, commonly called county bridges, equally numerous or better attended to; the nature of the country, covered in great part with lofty mountains, some of them among the most lofty in the island, among which various rivers have their sources, will probably account for both; certainly for their number, and the number probably for the care exerted in their maintainance. They have been for upwards of twenty years committed to the care of JOHN CARR, Esq. the celebrated architect of York, whose taste has embellished so many parts of the kingdom by various erections, but who derives his well-earned fame, perhaps, in no instance more deservedly, than from his eminent skill in the construction of bridges. To him, and to a spirited and intelligent magistracy, the North Riding is indebted for its many ornamental and substantial bridges, and for the care and economy exhibited in their construction, and the public, for the great accommodation derived from them. Their number is supposed to amount to about 130, many of them of great extent, and erected in very dangerous situations. The Surveyor cannot help pointing out the little circumstance of their being marked with the initials of the Riding (Y. N. R.), in large characters. Where public works are so conducted as to do credit to those who have the direction of them, that credit the directors have a right to receive from the public; and the public knowing from whom they receive an accommodation, will not fail to acknowledge the debt. The mark is moreover highly useful to the magistrates, by pointing out what

what bridges are under their jurisdiction, and thereby affording the opportunity, through that knowledge, of pointing out any repairs or alterations that may be necessary.

Guide-Posts.—There appears to have been more attention paid to the fixing of guide-posts in times past, than to keeping them in repair at present: many of them have their arms broken off, or are so defaced as not to be legible, and many more are entirely wanting. Without their assistance, it is very difficult for a stranger to find his way in almost every part of the Riding*.

SECT. II.—CANALS.

It has already been noticed in chapter I. sect. VI. that nature has afforded the North Riding navigable water on half, at least, of its circumference: the Derwent and Ouse, from Malton, by York, to Ripon, on the south; the Tees, to Yarm, on the north, and the sea to the east; but that art has aided navigation only in one instance, by a canal from York to Stillington; a distance of about fourteen miles, according to the circuit which the canal makes: of this, not more than half is yet (autumn, 1798) finished.

The object of this canal is chiefly to convey lime and coals upwards, into a country particularly in want of the former, and to drain † some low grounds in the vicinity of York:

* Attention to these minutiae, is a striking mark of civilization, and is more particularly conspicuous throughout the county of Suffolk, than in any other county in the kingdom, in which I have travelled.—*W. Fox.*

† As a drainage, the object has totally failed, owing to retaining a head of water for the supply of the Castle mills, situate near its junction with the Ouse; for which purpose a ten-foot lock was erected at those mills, which

York: on the former, the chief reliance is had for affording an income to defray the expences. Downwards, will be conveyed the usual produce of the country, grain, butter, and bacon, and perhaps hereafter, timber and stone for building, or for the roads. From what judgment can yet be formed, more business is likely to be done on this canal, when completed, than was at first expected.

Perhaps in time, a canal may be seen passing down the vale of York, joining the Tees and Ouse; a work of great utility, and very practicable.

SECT. III. AND IV.—FAIRS, AND WEEKLY MARKETS.

THE following list of the fairs, and weekly markets, is selected from the most authentic printed accounts of them; to which I have made such corrections and additions, as the information I have received, and my own knowledge, have pointed out.

keeps up the water nearly on a level with the surface of the low grounds; it therefore was necessary to make another cut for a drain, which was tunnelled for a considerable distance through York, at a great expence, which has never answered its purpose, owing probably to some error in the level. The retaining a head of water for them was of little consequence, as a steam-engine had a few years before been erected, to work them in times of scarcity of water, and by which they might, and (owing to all the water being wanted for the use of the navigation) now are, wholly wrought.

If the level of the Ouse had been retained to Monk-bridge (the north-eastern environs of York), and a ten-foot lock had there been made, the canal would not only have completely drained those low grounds, but would have rendered that part of the city near to it more healthy; and a very considerable expence would have been saved.—J. T.

Towns.

Towns.	Market Days.	Fair Days.
Askrigg	Thursday	May 11, first Thursday in June, both for articles of cloathing and furniture; October 28 and 29, for cattle, sheep, and for eloathing, &c.
Bedale	Thursday	Easter-Tuesday, Whitsun-Tuesday, and July 5 and 6, for cattle, horses, sheep, leather, and small wares; October 10 and 11, for cattle, sheep, hogs, and leather; Tuesday se'n-night before Christmas, for cattle and sheep.
Brompton	—	November 12, a small fair for swine and horses.
Coxwold	—	August 25, for cattle, sheep, pewter and hardware.
Easingwold	Friday	July 5, and September 25, for cattle, horses, sheep, and linen and wool-len cloth.
Egton	—	Tuesday before February 15, Tuesday before May 11, September 4, Tuesday before November 22, for cattle, boots and shoes.
Guisbrough	Monday	Third Monday and Tuesday after April 11, for cattle and linen cloth; Tuesday in Whitsun-week, for cattle and linen; August 26, for cattle and linen; September 19 and 20, and first Monday after November 11, for cattle.
Hawes	Tuesday	Whitsun-Monday, and September 28, for cattle and sheep.

Towns.	Market Days.	Fair Days.
Helmsley } Blakemoor }	Saturday	May 19, July 16, October 2*, and November 6, for cattle, horses, sheep, and linen and woollen cloth.
Kirby- moor-side }	Wednesd.	Wednesday in Whitsun-week, for cattle and horses; September 18, for cattle and sheep, linen and woollen cloth.
Leyburn	Friday	Second Friday in February, May, October, and December, for cattle and sheep.
Malton	Saturday	Saturday before Palm-Sunday, for cattle and horses; Saturday before Whitsunday, for sheep, brass and pewter; October 10, for cattle, horses, and small ware; also a great ram-shew on that day; the day following, for sheep. A market has been lately established, and is held every fortnight, for fat and lean cattle, sheep, lambs, and calves, and also for wool, during the season.
Masham	Tuesday	September 17 and 18, for cattle, sheep, and small wares.
Middleham	Monday	November 6 and 7, for cattle and sheep.
North Al- lerton }	Wednesd.	February 13, May 4, September 4, and October 2, for cattle, horses, and sheep; and second Wednesday in October, for cheese.
Pickering	Monday	September 24, for cattle and sheep.

* The sheep-fairs are held the day preceding the 2d and 6th.

Towns.

Towns.	Market Days.	Fair Days.
Reeth	—	Friday before Palm-Sunday, Friday se'nnight befor May 12, Friday before August 24, Friday se'nnight before November 22.
Richmond	Saturday	Saturday before Palm-Sunday, first Saturday in July, and September 14, for cattle, sheep, and horses.
Scarborough	Thursd. and Saturday	Holy-Thursday.
Seamer	—	July 15, for cattle, sheep, and horses, boots, shoes, and linen cloth.
Stamford-bridge	—	December 1, for cattle, sheep, horses, and articles of cloathing and furniture.
Stokesley	Saturday	Saturday before Trinity-Sunday, for cattle, sheep, horses, and linen cloth.
Thirsk	Monday	Shrove-Monday, April 5, August 5, October 28 and 29, and Tuesday after December 11, for cattle, sheep, leather, and linen and woollen cloth.
Tollerton	—	August 26, for cattle, sheep, horses, and cheese.
Topcliffe	—	July 17, for cattle and horses, and the 18th for sheep.
Whitby	Saturday	September 6, and November 22.
Yarm	Thursday	Thursday before April 5, and Holy-Thursday, for cattle, horses, and sheep; August 2, and October 19, for cattle, and the 20th for horses, sheep, and cheese.

SECT. V.—COMMERCE.

THE district under survey, can by no means be called commercial, unless the employment of many ships belonging to the inhabitants of Whitby, in the carrying-trade, in time of peace, and the transport-service, in time of war, may give it that title. In external trade, Whitby does more business than any other place in the Riding, though this is by no means considerable: it sends several ships every year to the Baltic, for the supply of the town and neighbourhood with articles from thence; employs a few in the coast-trade, and about ten, on an average, in the whale fisheries.

Scarborough employs some ships in the carrying-trade and transport-service; and in peace, sends several ships into the Baltic and to Holland, besides employing some on the coast.

From Cleveland port, on the mouth of the Tees, considerable quantities of wheat, oats, beans, butter, bacon, and cheese, are shipped for the coal-country near Newcastle, and for London; and coals, and other necessary articles, are brought in return*.

Malton is also a place of considerable internal commerce in corn, butter, and bacon, produced in that neighbourhood: these are sent by water to the West Riding, from whence coals and lime are brought in return. As lime is

* The corn shipped from Cleveland in 1798, was not nearly equal to the quantity shipped in some preceding years, owing to the great demand inland, westward, and the great quantity which was made into flour, and shipped to different parts; the quantity of wheat shipped, might be 5000 quarters, and of oats 30,000 quarters; the price of wheat, from 5s. to 6s. per bushel, and of oats, from 2s. to 2s. 6d. per bushel.—N. R.

plentiful

plentiful in the vicinity of Malton, what is brought by the river, is chiefly consumed on the banks of it below that place.

York also, though not properly within the Riding, sends to various places much of the produce of the North Riding, which runs up to the walls of the city; as, bacon, butter, cheese, grain, &c.

SECT. VI.—MANUFACTURES.

At Whitby and Scarborough, are considerable manufactories of sail-cloth and cordage, for shipping.

For a few years previous to 1797, about 2600 bolts, or pieces of sail-cloth, were annually made at Scarborough; since that time, the quantity has not exceeded 2000 annually. During the years 1790, 1791, and 1792, the quantity of hemp manufactured into cordage, was from 130 to 140 tons annually; but the whole quantity manufactured in the years 1795, 1796, and 1797, did not exceed 130 tons.

At Whitby, the average number of bolts of sail-cloth manufactured during the last four years, is 9986 annually: about 250 tons of hemp are made into cordage; and upwards of 6000 tons of shipping are annually built there.

At Peak, Eskdale-side, Little-beck, Sands-end, Kettle-ness, Boulby, Loft-house, Goadland-banks, and some other places, all in the neighbourhood of Whitby, are works for the making of alum. By the entries at the custom-house at Whitby, it appears that about 4000 tons are annually shipped from thence, beside what is shipped from other places, of which no account can be obtained.

In the dales of the Eastern Moorlands, and in Cleveland, some coarse linens are manufactured, many of the small farmers employing two, three, or four looms for weaving them.

At Crathorne, in Cleveland, is an extensive bleach-yard, and a beetling-mill, where linens are made up similar to the Irish. There are also bleaching-grounds, and the machinery necessarily attendant upon them, at Wass, Byland-abbey, Skawton, Otstead, and other places about the Hambleton hills, which abound in springs of water calculated for the purpose.

The dales of the Western Moorlands have long been famous for the manufacturing of knitted-worsted and yarn-stockings. The present mode of agriculture of that country not affording the inhabitants much employment, this of knitting makes up the deficiency; at which they are so expert, that it is very common for them, when walking along the roads, or in the fields, to be employed in knitting. But this ancient employment is upon the decline; since the increase of manufactures in the West Riding, and in Lancashire, spinning worsted has been introduced; and being a more agreeable employment to the inhabitants than knitting, it is likely the latter will, in the course of a few years, be in a great measure laid aside.

In Wensley-dale, in the years 1784 and 1785, three cotton-mills, and a scribbling-mill, were built, and a few calicoes have been made; also in the year 1793, a small mill was erected for carding waste silk; since which period, a cotton-mill has been erected at Easingwold.

At Masham, there is a cotton and a worsted-mill; and in that neighbourhood, some shalloons and shags are manufactured, but not to a great extent.

Bricks are made near York, and in various other parts of the Riding; but the use of them is generally declining, where

where it is possible to procure stone, on account of the excessive tax that is laid upon them. Near York, flat tiles and pantiles, garden-pots, and other articles of coarse earthen-ware, are made, but to no material extent.

Almost every town has tanners and tawers, to work up the hides and skins, the produce of the neighbourhood.

Near Pickering, is a mill for making coarse paper; and at Ayton, near Scarborough, are furnaces and forges for casting and working run and malleable-iron.

After thus enumerating whatever may be called the manufactures of the Riding, it will be found, that it may be called a purely agricultural district, and to be less connected with manufactures than almost any other district in England of equal extent; and in general, where the nature of the country will admit of it, to be inhabited by an industrious and sober race of yeomanry and farmers; a proof farther than which, none is necessary, of the absence of manufactures; for agriculture and manufactures have never yet been found to flourish in the same country. Manufactures thus dispersed, and carried on to this small amount, have probably not been otherwise than beneficial to the agriculture of the district: they have in some degree helped to promote the population of particular places, that would otherwise have been unpeopled, or very thinly settled; they have afforded a nearer market for some particular articles, and increased the profits of some of the lower classes of people, and thereby advanced, in a proportionate degree, the value of the produce of the land; and some land in their immediate vicinity has become more valuable, in consequence of being occupied in smaller allotments by manufacturers, and at an higher price than a farmer could afford to pay for it.

The linen manufactory in the eastern part of the Riding, and the woollen manufactory in the western part, are,

are, in their present state, rather an advantage to agriculture, without being very prejudicial to the individuals who carry them on, by corrupting their morals, or impairing their health; but instances have already occurred, of serious illnesses having prevailed in some of the cotton-mills.

They, no doubt, would be found more beneficial to the interests of agriculture, were they not built upon so extensive a scale. Where people are collected together in large numbers, their morals are liable to be depraved, their health injured, and when employed young, their growth lamentably impeded, and strength impaired. At these mills, great numbers of children are employed, and there meet with nurseries of vice, whatever they may do of industry.

SECT. VII.—POOR.

It has already been noticed, that the poor-rates are still comparatively moderate throughout this Riding (and they are absolutely so, where proper attention has been paid to the administration of parochial offices); and that various townships in the Riding have never yet known what it was to pay a poor-rate. These circumstances indicate, that the poor are either yet not numerous, or that they are moderate in their expectations. Both may be held to be the fact: that honourable spirit of independence, though woe-fully on the decline, is not yet extinct in the breast of the lower orders. Few, unless the very profligate, who cannot be expected to be numerous where manufactures have not corrupted their principles, or injured the constitutions of the mass of the people, fly to the parish for a maintenance,

ance, without compunction. They who receive it, feel themselves sunk at once in the scale of society; a degradation which no one submits to without regret. Though the lower orders know that the parish relief is their legal right, whenever necessity, however caused, may compel them to require it, yet they seldom here act, in the early part of life, on a systematic principle of neglect and improvidence, assured of this support in their latter days; a laudable pride generally prohibits them from applying for parochial relief as long as they can subsist without it; and they ask not for it until absolute want compels them.

The labouring classes of both sexes, generally set out in life as servants in husbandry. In this occupation they are liberally paid, and many are able to save in a few years, sufficient to enable them to marry, and start as housekeepers, in possession of the necessary requisites of their situation. While thus living and occupied, they learn the habits of industry and economy in the houses of the farmer; for it has generally been observed, that no people are better paid, work harder, or are more economically maintained, than the farming servants of this district. To these early habits, may much of the future comforts of this class be fairly attributed; nor ought it to be forgotten, that to the females a very large share of it is to be ascribed: their industry is not exceeded by that of the women of any country; equalled by few: the dairy is entirely theirs; and no trifling labour attends it: they perform at least half the harvest work; they labour at that season with the men, and many of them as well; they weed the corn; they make the hay; they mould the fields; and perform a multitude of the lesser occupations of husbandry. For so much out-of-doors labour, it is not a little money that they earn, which goes a considerable way in maintaining the family; while the labourer's wife, in many other parts, is only occupied

pieced in drinking tea, perhaps, dashed with gin. At home, when the weather or season of the year does not permit the labours of the field, the women spin flax, or wool, chiefly for the use of the family. For the men, there is constant employment, and high wages; at this time, more work than hands, and higher wages than are requisite. Such habits cannot but have a strong tendency to keep down the poor-rates, and elevate the individuals who are the objects of the poor-laws, by a spirit of independence.

Hitherto, no receptacles have been constructed for the maintenance of the poor of extensive districts; plans which have been thought by some to have had an unfavourable operation; which by others are highly commended; though instances occur of a few adjoining parishes uniting in purchasing or providing a house for the reception of their own poor. These instances, however, which are not numerous, do not afford any examples worthy of imitation, or have any thing peculiar in their management, to recommend them: in them the poor are usually farmed out, that is, maintained by contract; a principle invariably bad.

Nothing can tend more to preserve the general respectability of the labouring classes of the community, and to keep up that honest pride, which forbids them to accept of the compulsory support of a parish-rate, and to render that acceptance a disgrace on those who are maintained by it, than the establishment of friendly societies, or associations voluntarily entered into during youth and health, for the support of the members in age and sickness. Many of these societies have long been established in the Riding; and their affairs, excepting some few instances of embezzlement, have generally been well conducted. Fifty-one societies have already been enrolled under a late act of parliament; forty-five societies in 1794, three in 1796, and three

three in 1797; and their number is likely to increase by fresh associations.

In addition to the above-mentioned strong recommendations which these societies possess, we must not overlook their *direct* tendency to diminish the poor-rates, by diminishing the number of those who would, without such institutions, be under the necessity of applying to them for relief; and their *indirect* tendency, by introducing habits of economy, frugality, and foresight, among people with whom they were, previously, too deficient: the favourable operation of these institutions are manifested wherever they are established.

The northern counties have long been remarkable for their number of free-schools, and the cheap and useful education afforded to the middle and inferior orders of the people, in their respective neighbourhoods.

In these schools, not only many of the gentry of the country have had their education, and from thence have risen into eminence, but many, with most unfavourable prospects in their youth, have, with the aid of an education received here, risen to the first offices in the state, in the professions, and in commerce. Our forefathers were no less attentive to these foundations, than were those of our neighbours in the adjoining counties; but it is much to be regretted, that their posterity have not followed up the principles on which their ancestors acted, but have allowed, of late years, many of these excellent institutions to fall into total neglect and decay, and their funds to be embezzled, or perverted from the purposes intended by the founders. It is an undoubted fact, that of many of these schools (it is believed of a majority of them) in this Riding, *the doors are shut, and the stipends evaporate in the hands of sinecure masters*: the gentry of the Riding are thus put to a great and unnecessary expence and inconvenience, in sending

ing their children to remote schools for their education ; and the inferior orders, for whose use these free-schools were more especially founded, suffer an irreparable injury, in being deprived of every means of education. The reign of ignorance in the latter class of society, has been sufficiently long, and the fruits of it have nothing in them commendable : to it may be ascribed much of the licentiousness, and much of the unsettled principles of the times ; it is now fitting to counteract these evils, by the practice of an opposite system. Let it be tried what education can do ; enable the lower orders to think ; place before them the advantages that will arise to themselves, from order, from sobriety, and industry ; and having learnt in what their happiness consists, they will not turn their backs upon it.

These abuses, together with some instances that occurred when inquiries were made into the charitable donations, by authority of T. GILBERT'S act, in 1786, of the embezzlement of the funds and estates of hospitals and charities, call aloud for the interference of the legislature.

This, the committee, appointed to inspect and consider the returns made by the ministers and church-wardens, relative to charitable donations for the benefit of poor persons, notice in such strong terms, that we cannot do better than repeat their words : " Your committee think it necessary to observe to the house, that upon the face of the said returns, many of the charitable donations appear to have been lost, and that many others of them, from neglect of payment, and the inattention of those persons who ought to superintend them, are in danger of being lost, or rendered very difficult to be recovered ; and that the matter seems to be of such magnitude, as to call for the *serious and speedy attention* of parliament, to amend and explain the said act, by specifying, with certainty and precision, the objects

objects to which they may think fit to direct their inquiries, in order to procure full and satisfactory returns, and the establishment of such measures, as may be effectual for the relief of the poor persons who were the objects of these donations, and for carrying the charitable and benevolent purposes of the donors into execution."

No farther steps, however, in the business, have been taken by parliament; nor indeed does it appear necessary, while the statute of pious uses, passed in the 43d of ELIZABETH, remains in force; a statute passed with a view of snatching these estates from the hands of those who would then, as they will now, if they can, direct the produce from the poor into their own pockets. This statute empowers the Chancellor, and the Keeper of the Great Seal, and the Chancellor of the Dutchy of Lancaster, to award commissions to the bishops of every diocese, and to other persons of good and sound behaviour, authorizing them to inquire of all such estates, gifts, &c. granted and founded for the benefit of the poor, and of all abuses and breaches of trust respecting them; a commission from which much benefit might be derived, if issued where such embezzlements are suspected to have been committed; but it is a commission which has laid so long dormant, as to have the uses and purposes of it almost forgotten.

SECT. VIII.—POPULATION.

AN account of the population of a country solely occupied in agriculture, can be no otherwise interesting, than as stating the number of the inhabitants at the time of giving it; because in such a country, and where the property is as

sta-

stationary as in this Riding, no material change in numbers is likely to take place. The Surveyor, however, is by no means able to speak on that interesting point, not having had the means of obtaining the information, or the time requisite for making the inquiry, in a district so very extensive. All parts of this Riding, except the Moorlands, are as fully peopled as the nature of it will admit. Some of the old and large estates are less populous than heretofore; for where an improved cultivation has taken place, the little tenements have necessarily and gradually given way, in order to form a farm worthy of the attention of a person possessing such a capital as might improve it. In general, the worst cultivated and most neglected estates, as well as the most neglected and worst cultivated parts of the country, are the most populous; there many people, with small occupations, plodding on in the path of their forefathers, with little capital, and less industry, contrive to find a bare existence. This consolidation of tenements, however, will be found, by what has already been said in the first section of the sixth chapter, to have been practised no farther than was requisite for the encouragement of cultivation. Very few of what may be called large farms, are any where to be met with, the Riding being generally occupied in tenures of moderate extent. To counterbalance this declension of population, are the additional inhabitants of lands formerly lying waste, but of late taken into cultivation; the great increase of the population of Whitby, and some addition to that of a few other towns; and, though there is reason to believe that little alteration has taken place in the sum of the population, of late years, yet that alteration is probably by increase.

CHAPTER XVI.

OBSTACLES TO IMPROVEMENT:

INCLUDING GENERAL OBSERVATIONS ON AGRICULTURAL LEGISLATION AND POLICE.

THE obstacles to improvement in agriculture, though numerous, are either such as are general throughout the kingdom; or, if of a more confined nature, extend to various districts beyond the one under survey; none are to be mentioned, as peculiar to the North Riding. Of those general obstacles, the following are the principal, viz.

1st. Tythes.

2d. The want of a general inclosure bill.

3d. The want of such an agreement or understanding between the landlord and tenant, as may induce the latter to lay out his money with a reasonable certainty of reaping the benefit of it, or at least not losing the principal, in case of death, or being discharged from his farm.

4th. A too frequent want of sufficient capital in those who take farms; and of an agricultural education among farmers in general.

5th. The general monopolies of all the produce of the land, which prevail in favour of the manufacturer and the merchant, and (as it is intended at least) in favour of the consumer, in opposition to the interest of the land-owner.

6th. The present excessive taxes upon, and the oppressive and unreasonable restrictions in, the consumption of salt.

7th. The rapid increase of the poor-rates.

8th. The undue liberties taken by many in the pursuit of games.

1st. Tythes, by being a tax not only upon the land, but on every exertion of industry or expence laid out in the cultivation of it, operate as a powerful obstacle to improvements in agriculture*, and are the cause of much land remaining

* "Agriculture is discouraged by every constitution of landed property, which lets in those who have no concern in the improvement, to a participation of the profit. This objection is applicable to all such customs of manors as subject the proprietor, upon the death of the lord or tenant, or the alienation of the estate, to a fine apportioned to the improved value of the land: but of all institutions which are in this way adverse to cultivation and improvement, none is so noxious as that of *tythes*—a claimant here enters into the produce, who contributed no expence whatever to the production. When years, perhaps, of care and toil, have matured an improvement; when the husbandman sees new crops ripening to his skill and industry—the moment he is ready to put the sickle to the grain, he finds himself compelled to divide his harvest with a stranger. Tythes are a tax not only upon industry, but upon that industry which feeds mankind; upon that species of exertion which it is the aim of all wise laws to cherish and support; and to uphold and excite which, composes the main benefit that the community receives from the whole system of trade, and the success of commerce. And, together with the more general inconvenience that attends the exaction of tythes, there is this additional evil, that they operate as a bounty upon pasturage: the burden of the tax falls with its chief, if not its whole weight, upon tillage; that is to say, upon that precise mode of cultivation which it is the business of the state to relieve and remunerate in preference to any other."—*Paley's Moral and Political Philosophy*, vol. ii. p. 496.

"Tythe, as it is frequently a very unequal tax upon the rent, so it is always a great discouragement both to the improvements of the landlord, and to the cultivation of the farmer. The one cannot venture to make the most important, which are generally the most expensive, improvements; nor the other to raise the most valuable, which are generally, too, the most expensive, crops, when the church, which lays out no part of the expence, is to share so very largely in the profit."—*Smith's Wealth of Nations*, vol. iii. p. 274.

"Thus

remaining in a state of unprofitable sward, which, by ploughing, and proper cultivation, might be increased to more than double its present value. Though in some cases the farmer might, notwithstanding the payment of tythe, improve the land with some profit to himself, yet the reflection that he would, at the same time, increase the interest of the tythe-owner to three or four times its present value, induces him rather to forego his own profit, than thus, at his own expence, increase that of another, with whom, in general, he is not likely to be on the most friendly footing.

The following calculations will sufficiently shew the oppressive tendency of tythes, and, in the improvement of lands, what a great proportion of the farmer's profit must go to another, who in equity cannot have the least claim to it.

Suppose a farmer is possessed of ten acres of land, in a state of nature, or nearly so, and of the value of 2s. 6d. per acre, subject to tythes in kind, which, in the present state of the land, will not be worth more than 3d. per acre: this he ploughs out with a view to improvement; the expences and profits of which will be nearly as follows:

“Thus he who deserves the most of his country, in consequence of the improvements he has made, is the most severely burdened. The most valuable class of men in the nation, on whose labours we depend for our very existence, are deprived of the fruit of their labour, and are compelled to labour with the dire certainty, that in proportion to their exertions and expences, will be the exactions of the tythe-owner.”—*Thompson's Tythes Indefensible.*

The first Year.

Dr.		Cr.	
		£. s. d.	
To original rent,		1	5 0
levelling, and paring and burning 10 acres, at 1l. 11s. 6d. per acre,	15 15 0		
ploughing and harrowing ditto, at 10s. 6d. per acre,	5 5 0		
six quarters of seed (oats), at 23s.	6 18 0		
harvesting 10 acres, at 6s. per acre,	3 0 0		
thrashing and winnow- ing 36 quarters of oats, at 1s. 2d. per quarter,	1 2 0		
six months' interest of the above,	0 16 0		
tythe of corn and straw unthrashed,	4 5 4		
expende in carrying to market,	1 0 0		
profit,	4 9 0		
	<u>£. 44 15 4</u>		
		£. s. d.	
		By produce, 36 quarters of	
		oats, thrashed,	
		- 36 0 0	
		four quarters of oats, un-	
		thrashed,	
		- 3 15 4	
		straw,	
		- 5 0 0	
		<u>£. 44 15 4</u>	

Thus it appears, that the tythe-owner, without any expence, or the exercise of any knowledge or industry, has his interest advanced, at the expence of the farmer, from 2s. 6d. to 4l. 5s. 4d. while that of the farmer, who is at all the expence and labour, and runs all risks, only amounts to 4l. 9s.

The second year, that land should be a turnip, or other fallow; the expences of making which, will be nearly as follows:

Dr.

OBSTACLES TO IMPROVEMENT.

325

Dr.	£. s. d.	Cr.	£. s. d.
To original rent,	1 5 0		
three ploughings, with necessary harrowings of 10 acres of land, at 8s. per acre each time,	12 0 0		
four chaldrons of lime per acre, and carriage; say 12s. per chaldron,	24 0 0		
turnip-seed and sowing,	0 13 0		
hoeing, at 8s. per acre,	4 0 0		
tythe,	2 0 0		
	<u>£. 43 18 0</u>		
		If the season, and all circum- stances, are favourable, the turnip crop, upon land of this quality, may be worth 2l. per acre,	20 0 0
		The farmer out of pocket,	2 18 0
			<u>£. 43 18 0</u>

The third year, this land should be sown with oats and grass-seeds; the expence of which will be about as under:

Dr.	£. s. d.	Cr.	£. s. d.
To original rent,	1 5 0		
six quarters of seed (oats), at 23s.	6 18 0		
ploughing and harrowing, at 8s.	4 0 0		
harvesting, at 7s. per acre,	3 10 0		
thrashing and winnowing 45 quarters of oats, at 1s. 2d.	2 12 6		
six months' interest on the above,	0 9 0		
one year's interest of last year's loss,	1 3 10		
carrying to market, &c.	1 6 0		
tythe of corn and straw unthrashed,	5 9 2		
profit,	30 10 8		
	<u>£. 57 4 2</u>		
		By produce, suppose 5 quar- ters per acre,	0 0 0
		forty-five quarters thrash- ed oats,	45 0 0
		five quarters oats in the straw,	4 14 2
		straw,	7 10 0
			<u>£. 57 4 2</u>

OBSTACLES TO IMPROVEMENT.

The fourth year, grass.

Dr.

Cr.

	£.	s.	d.
To original rent, -	1	5	0
grass-seeds, sown in last year, -	7	0	0
sowing ditto, -	0	2	6
1½ year's interest on the above, -	0	10	6
one year's interest on prime cost of the sheep, say 30l, -	1	10	0
10l. per cent. on the produce, for casualties, -	2	5	0
tythe of lamb and wool, after the 10l. per cent. is deducted, -	2	0	6
profit, -	7	16	6
	£.	22	10 0

By one year's support of 25 ewes, and of their lambs during the time they suck; the profits of which may be estimated as under:

	£.	s.	d.
30 lambs, at 12s. each, -	18	0	0
25 fleeces of wool, 9 stones, at 10s, -	4	10	0
	£.	22	10 0

The fifth year, grass.

Dr.

Cr.

	£.	s.	d.
To original rent, -	1	5	0
one year's interest of cost of sheep, say 24l, -	1	4	0
10 per cent. on the produce, for casualties, -	1	15	9½
tythe of lamb and wool, after the 10 per cent. is deducted, -	1	12	2½
profit, -	12	1	0
	£.	17	18 0

By one year's support of 20 ewes, and of their lambs during the time they suck; the profits of which may be estimated as under:

	£.	s.	d.
24 lambs, at 12s. each, -	14	8	0
7 stones of wool, at 10s, -	3	10	0
	£.	17	18 0

RECAPITULATION.

Dr.

Cr.

	£.	s.	d.
To loss the second year, -	23	18	0
balance of profit, during a five-years' course, -	30	19	2
	£.	54	17 2

	£.	s.	d.
By first year's profit, -	4	9	0
third year's ditto, -	30	10	8
fourth year's ditto, -	7	16	6
fifth year's ditto, -	12	1	0
	£.	54	17 2

THE

THE TYTHE-OWNER'S PROFIT.

	£.	s.	d.
The first year, -	4	5	4
second year, -	2	0	0
third year, -	5	9	2
fourth year, -	2	0	6
fifth year, -	1	12	2½
	£. 15	7	2½

Thus it clearly appears, that the farmer's profit for five years, in the improvement and cultivation of ten acres of land subject to tythe in kind, only amounts to 3ol. 19. 2d. while the tythe-owner's profit amounts to 15l. 7s. 2½d. and the landlord's rent is only 6l. 5s. and this where the land is supposed to be already fenced, and not to want draining: if these are necessary, the farmer will for many years be considerably out of pocket, while the tythe-owner will be reaping a profit equal to the above. What encouragement, then, for the improvement of land *? Under such circumstances, none can be made in land of ordinary quality, which more strongly demands improvement. However, it may be said, that in the district under survey, the hurtful tendency of tythes is in most cases softened, by their being lett to the farmers for a rent in money, in many instances for a term of five years, though in others only from year to year; yet, as the rent increases at the commencement

* I am not alone in my sentiments on this subject. THOMPSON, in his "Tythes Indefensible," says, "Where the land is bad, and requires more than the usual expence of labour, previous to the production of a crop, the tythes in kind are often fully equal to the whole profit of the farmer, and equal to the full annual value, or the whole rent of the land paid to the landlord; in many instances, it is far greater than the landlord's rent, or that and the farmer's profit united. It must, however, be contrary to the spirit of the law at least, that the tythe-owner should carry away from any estate as much property as is equal in value to the profit of the farmer, or the rent received by the landlord."—

of each term, and with the increased quantity and improvement of the arable land, it has much the same effect in discouraging improvements as when taken in kind.

An injury so great to the public, and so oppressive to the most useful and necessary class of society, demands the immediate attention of the legislature, which will be well employed in devising the means of doing it away*.

2d.

* Tythe being the greatest obstacle to agricultural improvement, I will, for the consideration of the Honourable Board, suggest a scheme for its removal. Suppose commissioners were empowered by act of parliament, to value and sell off all the tythe of every parish in England, save where the lay-rector is proprietor of the estate, and, after having fairly valued the tythe of every estate, to give to every land-owner, out of whose farm tythe is taken, an opportunity of purchasing his own, and an estate to be purchased with the accumulated monies arising from the several sales of the tythes of the parish, for the benefit of the parson, or lay-rector, in lieu of all tythe. To obviate difficulties which might attend the execution of the scheme, if any land-holder should think the tythe of his estate valued too high, the commissioners might be allowed to name one discreet person, and the land-holder another, whose determination, provided they agree, should be final; but if they cannot agree, a justice of the peace, a lay-man, whose residence is nearest to the parish, should be nominated by the two arbitrators, as umpire; and the determination of the magistrate so chosen should be final. If settling disputes by arbitrators should be thought too tedious, any person should be allowed to purchase the tythe of another, unwilling to purchase his own, for the sum charged by the commissioners, and to have legal interest paid out of the said-estate; the mortgage to be renewed every seven years, and the land-holder, who might not be able before, to have an offer at such stated periods, of redeeming or purchasing his own.

A lease of the land so purchased, should be granted for the term of twenty-one years, with liberty for the tenant, and his limited assigns, to hold the said farm during the term of years above named, even if the parson who granted such lease, should by privation, promotion, resignation, or death, have no property in the said estate before the expiration of the lease; the parson, at the expiration of every lease, to be restricted from letting the said farm for less rent than was covenanted for in the lease preceding, unless a decrease of rent was general. I here suppose, that a lease might expire at a time when the parson was far advanced in years, say seventy-five, or eighty: from his age and infirmities, he could not expect but a short enjoyment of his preferment, therefore might be induced, by importunate friends, or money, to underlet the farm, to the very great disadvantage of his successor.

Another

2d. The want of a general inclosure bill, operates as a powerful preventative to inclosing commons and open-field lands, and consequently to their improvement. The expence of an act of parliament is so heavy, as to be incurred only where very extensive tracts are intended to be inclosed: an act is rarely obtained at a less expence than 300l.; frequently at a much greater; which, with the other necessary expences attendant on the division and inclosure, has in some cases amounted to near half the fee-simple value of the land to be improved.

3d. Though it is the prevailing practice in the district under survey, to lett the land from year to year, and without any covenants (under which system, nevertheless, great improvements have taken place in it, and the same families have continued for generations on the same estates, with a full and mutual confidence between landlord and tenant), yet there are instances where such confidence has been wanting, from the misconduct of one or both of the parties, and where a lease, or an agreement, ought to have been executed, to save either party. A prudent man, therefore, when he hires a farm, will, in most cases, either expect a lease for such a term as will repay the money he may lay out upon improvements, or, if he take it from year to year, have such an agreement executed as he can rely upon; and by following which, he can have little reason to look for removal from his occupation. Whether,

Another scheme:—Suppose the tythes of every farm were valued by commissioners appointed for that purpose, and, after a valuation being thus made, the commissioners were to mark out and set apart upon the farm, or, if the whole parish belonged to two or three proprietors, the several farms for the use of the parson, or lay-rector, in lieu of all tythe; if the valuation be fair, neither the landlord nor tenant will lose a sixpence. If the parson gets peaceably an adequate compensation in lieu of tythes, can he complain? The land so marked out, will increase in value with other land, therefore his successor cannot be injured: the old tenant, from his contiguous situation, may hire the parson's field.—*J. Smeddle.*

however,

however, such an agreement can be hit upon, as will effectually secure both landlord and tenant, without injuring either, appears to be doubtful. The principal covenants of such an agreement, on the part of the landlord, should bind him to be at the expence of all capital improvements, such as buildings, and their principal repairs, planting new fences, draining, marling, &c.; to pay the tenant, on his quitting the farm, the expence of making the last year's fallow, for the seed and labour of the wheat sown down, and for the grass-seeds which have been sown the last year, and to make a reasonable recompense, to be determined by arbitration, for all extraordinary improvements made by the tenant during his occupation, for which it should appear that he had not yet had an adequate return: this last article in particular, would be a great inducement to the tenant to expend a capital upon improvements, where his tenure was uncertain.

Those on the part of the tenant, should be similar to the following: not to have in ploughing, at the same time, more than a certain proportion of his farm, say one-half; that not more than one-half of the ploughed land, in each year, should be cropped with wheat, rye, barley, or oats; that not less than one-fourth should be manured for turnips or a summer-fallow; that not less than one-eighth should be sown with tares, or with peas and beans, in drills of a sufficient width to admit of their being effectually cleaned; not more than one-sixteenth should be sown with rape for seed, line, hemp, weld, &c. or planted with potatoes (for any of which crops, the land should be well manured); and that the remaining sixteenth should be red clover; that the tenant should not sell any hay, straw, or manure, from the premises, except the farm is in a situation where straw is of more value to sell, than it is to the farmer to consume on his farm (in which case, the value of the straw

which

which is sold, should be laid out in the purchase of manure; that he should clean out one-third part of his fence-ditches annually, and cut no thorn-hedges of less than ten years' growth, without plashing them in a masterly manner.

How far such an agreement would make the minds of both landlord and tenant easy, can only be proved by experience. Something similar to the above, varied according to circumstances, appears in most cases necessary to be adopted; and were such regulations strictly complied with, neither landlord nor tenant would materially suffer by the latter quitting the farm.

4th. Another circumstance, which greatly impedes improvements in agriculture, is the practice (too prevalent among farmers) of engaging with farms to which their capitals are not equal. The consequence of such imprudence is, that the land is ill cultivated, and cropped much longer than is profitable. The stock of such a farmer is generally of an inferior kind; and the constant and pressing want of money, frequently obliges him to sell his stock and produce at the most unfavourable times. Thus his farm becomes annually less productive, until at last, borne down by continual demands, except saved by some fortuitous circumstance, he ends in being a bankrupt. Young farmers are very apt to fall into this error, from which they rarely recover, not at least till after having spent some of their best years uselessly, if not prejudicially, to themselves*.

Though individuals are sometimes enabled, by long observation and practice, to strike out improvements beneficial to themselves and the public, yet the want of an edu-

* It is singular in the highest degree, that gentlemen do not enquire into the characters of their tenants. If the character of a domestic servant be necessary, that of a farmer must be more so.—*J. Smeddle*,

cation more immediately directed to the attainment of the knowledge of agriculture, is a great bar to improvements amongst the far greater proportion of farmers. This class of people, not being accustomed to travel from home, and having but little inclination for reading, is, in a great measure, ignorant of the improvements which are made in other counties; and, if a more enlightened neighbour should strike out any thing new, or adopt an improvement from a distant part, in his practice, is too apt to hold him in contempt, for thinking himself wiser than their forefathers, who saved money by *the good old practice*. Thus, through the prejudices of education, or rather from the want of it, improvements in agriculture are much longer in being generally adopted, than in any other science.

5th. A fair and open market is frequently shut against every material produce of the soil: the person, therefore, that bears all the toil and expences of cultivation, and runs all the risk and chances of it, is excluded, to favour the merchant and manufacturer, that deals in, or works up his produce. As far as the laws for these purposes have operated to depress the price of the produce of the land, they have operated against the interest of agriculture; but should their only operation prove to have been to favour the dealer, and not to diminish the price to the consumer, as is probably the fact, since every restriction in the produce, and the uncertainty of receiving a fair price for it, will have the effect of diminishing the quantity in the market, and consequently increasing the price; then have these laws operated against both the grower and consumer. But to enter into such a dissertation on agricultural legislation, as the subject would admit of, would far exceed the limits of this work: it is sufficient to have hinted at it. The subject has employed the ablest heads in the

the country, and will continue for ages to come, should the system last as long, to engage their attention.

6th. The laws respecting salt, as they now exist, are no inconsiderable evil; and since the late duty laid upon it (in 1798), their effect will become more sensible in the curing of all articles which require a large quantity of it: bacon, butter, cheese, provisions, must either be greatly raised in price, or suffer in quality, from the want of a due quantity of salt. Cattle of all kinds, in every country, are remarkably fond of salt: it wonderfully conduces to their thriving, is a preventative of some disorders, and a cure for others, and, in most countries except England, is given plentifully to them; and was also here, before the taxes prohibited the use of it. In the manufacture of salt, a great quantity of damaged and dirty salt is unavoidably produced, which used to be applied to the purposes of agriculture, and occasionally given to cattle, being sufficiently clean for that purpose; but the frauds which this permission produced, were so great, that the legislature found it necessary to withdraw it, and to order the foul salt to be destroyed.

It may not be improper here, to point out what is the effect of taxation on this article: a bushel of salt, which, at the place where manufactured, could be afforded to be sold at about three-pence, or three-pence halfpenny, and which same salt is now actually sold in the United States of America* for about 2s. 3d. the bushel, after a transport of upwards of 3000 miles, and the expence of freight, insurance, commission, and merchants' profit, in the time of war, costs to the consumer in England not less than 14s. per bushel; the whole of which, above about three-pence,

* The United States of America are here mentioned, only, as they happen to be the most distant countries to which it is supposed English salt is sent.—

arises from taxes, or the additional price the dealer in salt is obliged to put upon it, to indemnify himself for the money advanced to pay the taxes. It is to be remarked, that as salt is produced in many parts of the world, both naturally and artificially, and may be made without art or difficulty, wherever the sea flows, salt exported does not admit of any part of the tax remaining upon it, but must have the whole of it drawn back.

7th. The effect of the poor-rates is too obvious to require being entered upon: enough has been said upon that subject already.

8th. From the game-laws, and the practices adopted under them, the active and industrious farmer, in some situations, sustains a great loss, and experiences a great check to his improvements, and much vexation. Though a landlord has the undoubted right, at the time of letting his estate, to reserve the game upon it for his own benefit and amusement, since, in that case, it is only reasonable to suppose that the tenant considers, in the rent he has to pay, any possible disadvantage or loss he might be liable to sustain; still there is no justification for such a person to go beyond the limits of his own property, and still less can a person, having no property or qualification whatever, be warranted in injuring others, by the pursuit of game, for which he neither can, or has any intention of making recompense. What I particularly allude to, is the excessive injury done to neighbouring farmers by tradesmen, who, in most considerable towns, keep packs of hounds; and, residing myself in a situation to experience them, I am qualified to speak feelingly upon the subject. Were it possible to form an estimate of the loss suffered in my own neighbourhood, by such trespassers, in breaking down hedges, riding over young wheat, trampling the first year's grass-seeds, damaging the turnips, chasing ewes heavy with
lamb,

lamb, and mixing the several stocks of cattle and sheep, by leaving gates open, and breaking gaps in the fences, he could not state it at less than several hundred pounds a year—and all this for the cruel sport of chasing a hare! This calls for redress; but the agriculturist, as laws and customs at present prevail, has not the means of obtaining it.

Hares and pheasants, where they abound, are very destructive to the corn in spring, and the turnips in winter; many of the last, being wounded by them, are lost to the farmer, as they rot, unless consumed immediately after receiving the injury.

To prevent these and other inconveniencies, might not the game be made, with advantage to all parties, the property of the occupier of the soil? He now undoubtedly feeds them; and should the owner of the soil wish to reserve a power to hunt, shoot, or course over his estate, he might have it, by its being made a condition in the lease or agreement between him and his tenant.

CHAPTER XVII.

MISCELLANEOUS OBSERVATIONS.

SECT. I.—AGRICULTURAL SOCIETIES.

THERE are no societies in this Riding for the improvement of agriculture. Some years since, one was held at Richmond; but either through a want of unanimity and perseverance in the members, or from a deficiency of their subscriptions, the institution has been dropped.

SECT. II.—WEIGHTS AND MEASURES.

WITHIN the North Riding, there is a considerable variety in the weights and measures, which also vary from those in adjoining districts: from these, as from every variation of the kind, considerable inconveniencies arise, particularly from the great inequality of the measure of corn, which at present seems entirely to rest on the will of the farmer, and throws great difficulties on him who is desirous of selling his produce by the statute-measure, because the corn-buyers who are accustomed to a market, know

know the respective measures of each farmer, and of course prefer that which is largest, since they pay no more for it, than for that which is agreeable to the statute*.

In the northern part of the Riding, the customary bushel exceeds that of the Winchester by full two quarts; but nearer to the southern extremity, seldom by more than one: the bushel of some individuals in the Riding, is still larger, measuring about ten per cent. more than the statute requires.

A stone of wool in York market, is sixteen pounds, and four ounces in each stone are allowed for draught, that is, for the draught of each fleece, the wool-buyers being empowered by act of parliament to weigh each fleece *separately*; if they like.

At Ripon market, a stone of wool is sixteen pounds twelve ounces.

A stone of wool in the Western Moorlands, is seventeen pounds and a half; the half pound, I apprehend, is for draught, as in York market.

At Darlington, where the wool grown in Richmondshire is chiefly sold, the stone is eighteen pounds.

In the Eastern Moorlands, the weights used by individuals, vary, up to nineteen pounds to the stone.

The pound of butter in the Riding, varies from sixteen to twenty-four ounces.

A stone of all other commodities throughout the Riding, is fourteen pounds.

That an uniformity of weights and measures should take place, is extremely desirable, as it would be highly advantageous to the public.

* It ought not to depend on the will of the farmer; every man ought to be compelled to abide by the statute-measure; for want of that, much confusion and injustice is the consequence.—*W. M.*

CONCLUSION.

MEANS OF IMPROVEMENT, AND THE MEASURES CALCULATED FOR THAT PURPOSE.

THE removal of the obstacles to improvement, noticed in chapter XVI. forms a considerable part of the means of improvement; but as they are fully treated upon in that place, it is unnecessary to dwell upon them here. What remains to be done, is to point out the objects to which the attention of the land-holder and the farmer ought to be directed; those will come under the following heads, viz.

Improvement in estates.

in cultivation and crops.

by draining.

by irrigation.

in fences.

in live stock.

by the establishment of agricultural societies.

Estates.—Those estates which lie dispersed in small parcels, would be greatly enhanced in value, by being laid more compact, and the houses being placed in a central situation on the farm, instead of standing in the villages.

This

This might be effected at a moderate expence, by the proprietors of lands, in a township where the property is dispersed, uniting in the choice of a commissioner, or commissioners, who should be empowered to exchange their lands, in such manner as they might think most advantageous to the proprietors.

It would be to the advantage of the landlord, as well as tenant, if the former were to be at the expence of all capital improvements; such as the buildings, the planting of new fences, draining, and such like permanent improvements, for which he might lay on an additional rent, equivalent to the interest of the money laid out: the tenant, by this means, would have his whole capital to employ in the cultivation and stock of his farm.

It would also be of great advantage to agriculture, if the fallows, as well as the manure of each farm, were made to belong to it, by the landlord's purchasing them on the first change of a tenant. If this were to become the case, a scale of husbandry for a number of years would be necessary, restricting the tenant to the system of cultivation * which

* Here I differ from Mr. Tuke, as I would never have any man enter to a farm on such conditions as would bind him to any particular mode of management. One of the greatest pleasures to a farmer, is to have liberty to try experiments in such a manner as his genius and disposition dictates. If he is not at full liberty to put his projects in execution, he is a slave: it must be a poor farm indeed, if a man would leave it for the sake of selling the manure and crop.—*W. M.*

A scale of husbandry would check agricultural improvements.—*J. Smeddle.*

Has not a landlord an equal right with a tenant to expect his property to be secured? Certainly he has; but if he lets his estate to tenants without restrictions, he commits his property to their prudence and honesty: every man of agricultural experience will allow, that the fee-simple value of landed-property may be greatly depreciated by the avarice or injudicious management of its occupier. In the course of my practice, I have seen frequent instances of this kind, and of the landlord's being under the necessity of taking a farm into his own occupation for a few years, to restore it to a proper state of cultivation and fertility. This is always attended with a great expence. How then can an im-

which should be pursued, but allowing him as full scope in the choice of his crops, as could be done consistent with that system: thus would the landlord be perfectly safe, and avoid the disagreeable consequence of a bad tenant leaving his farm, which he too often does, for the sake of selling the manure off the premises, and reaping his way-going crop the succeeding summer, upon the land which was fallow the preceding year. The tenant entering upon a farm thus circumstanced, would have the advantage of having less money to advance; for if the farm had thirty acres of fallow, it would require a less capital, by at least 100l.

Cultivation and Crops.—Green crops, such as turnips, clover, rape, to be eaten with sheep, or tares, should be substituted for dead fallows; or meliorating crops, such as peas, beans, rape for seed, mustard, line, teasles, &c.; for these last, the ground should be well manured, and such of them clean hoed as are capable of receiving that culture. By such means, the land would be producing a crop annually, and would be in an equal, if not a better state, for producing a succeeding crop, than if it had been summer-fallowed. Two crops of corn ought never to be taken without a meliorating or green crop intervening, except in cases of very rich land: if this practice were strictly attended to, summer-fallows would soon be annihilated.

Grass-seeds for temporary leys should be more frequently sown than is at present practised in some parts of this district; and when the land is intended to remain several years in grass, they should be sown without a crop of corn,

partial man think that it is wrong for an owner of an estate to lay his tenant under restrictions, when he has suffered so largely by the preceding one? I cannot see the impropriety, as the tenant makes one half of the bargain, and they mutually agree on a general principle of cultivation for a certain number of years.—*J. P.*

To

To obtain a turnip-crop without dung, is a point extremely desirable throughout the Riding, as it is now done in a considerable degree in the northern part of the vale of York; for, by this great improvement, the manure of the farm, which is generally entirely consumed for the turnip-crop, is spared for the grass-land.

Great inconvenience is frequently experienced in this district by the want of food, from the time of the turnips being finished to that of the grass being grown; in consequence of which, the cattle are almost entirely supported on the meadows till May-day, which is the usual time of breaking the pastures. Hence, hay-time being pushed back beyond its season, the crop is greatly injured; and the pastures, if old sward, by the time of breaking them, having obtained but little growth, and being fully stocked thus early, are prevented from getting a cover which might defend the roots from the scorching rays of the sun; and their produce also is thus much impaired.

To remedy these inconveniencies, nothing has yet occurred equal to the ruta-baga and winter-tares: the first is in high perfection a month later than turnips: the cultivation is the same for both; and though each of this new species of turnip may not grow to so large a size as those of the old one, yet will it produce as weighty and as valuable a crop, as each root is more ponderous in proportion to its size; and a greater number of them may be left upon the ground at the time of hoeing; and where too thin, they are found to bear transplanting, and the roots so transplanted, to be as large and forward as those which grew where originally sown. Sheep and cattle are not only fonder of them than of common turnips, but feed faster, and I think yield more tallow than when fed on common turnips: pigs thrive full as well on them as on potatoes, and horses will eat them freely.

Winter-tares, if sown early, will be found very valuable for the sheep-stock, to succeed the ruta-baga during the month of May. After these have been pastured for some time, they may either be suffered to stand for a crop of seed, or eaten clean off; and if the land be free from couch, it may be ploughed up for a crop of turnips.

By sowing rye-grass with the crop of corn the year preceding a dead fallow, much valuable spring food may be obtained until near Midsummer, time enough for the land to be ploughed.

Great advantage will be found from freeing part of the grass-land early in autumn, which will be found practicable, either by cultivating rape or turnips, to be eat off in time to sow the land with wheat, or by the purchase of such elsewhere. This grass-land should continue to be laid up during winter; and the cover which it has acquired in autumn, will produce a very early growth in spring. By this, and the other methods here recommended, greater plenty of food will be gained from Lady-day to Midsummer, than in any other part of the year, and plenty created throughout the whole of it*,

Potatoes.

* When once the farmer has begun the practice of eating his meadows in the spring, he is almost forced to continue it; he is always short of hay, yet has more than a due proportion of his grass-land in meadow; his pastures are overstocked during summer, often burned by the heat, and affording but little eatage in the winter. If ruta-baga, turnip-rooted cabbage, &c. are left on the ground till May, the farmer should have a mode pointed out, of getting his land again into the usual course; preparing it for wheat the succeeding autumn, that is, two fallows running, is what few will submit to, and would also throw a part of a field, all that need be devoted to such a crop, into a different course. Buck-wheat was sown this year (1794) after turnip-rooted cabbage, and it answered well. In this district, the fields are ploughed close to the hedges. Would it not be advisable to leave a belt of grass all round?—the loss in the arable crop, never great near the hedges, would be more than compensated by the grass mown; the weeds in the hedges kept under without trouble, and a power of cultivating partial crops in the same field without injury to either; which last cannot be done when the head ridges are ploughed. The hay is usually

Potatoes.—The raising of new varieties of potatoes from seed, is worthy the attention of farmers; for there is reason to believe, that new kinds might be produced, which for a few years would be much more productive than those generally in use at this time.

Sainfoin.—The cultivation of sainfoin upon limestone soils, cannot be too much encouraged, its value for hay being sufficiently proved: several parts of this Riding are well qualified for the growth of it, where at present it is little known.

Though a scale of cultivation cannot be formed to suit every variety of soil, yet the general principle of one calculated for a light soil, and another for a strong one, will apply in most cases to similar soils in every part where climate does not greatly vary. On these considerations, the following scales, formed agreeable to the foregoing principles of cultivation, are offered, as an improvement upon the present system of cultivation now practised in the district under survey*.

usually stacked in each field, and eaten under the lee-side of a hedge; by which the manure is lost, and great part of the hay wasted. Would not potatoes or carrots, housed, be an advantageous provision for spring fodder?—at all events, *coute qui coute*. To clear meadows, as well as pastures, with the first approach of vegetation in the spring, seems an indispensable foundation for good husbandry.—*Anonymous*.

Ruta-baga may be pulled and dressed in spring, and laid by to be used as wanted: it may this way be preserved until Midsummer; and the land on which it grew is thereby set at liberty to be cropped; but if this practice is not thought fit to be adopted, and the whole field is wished to be kept in the same state of cultivation, that part which had been cropped with ruta-baga, might be sown with buck-wheat and grass-seeds, or with grass-seeds alone, the remainder of the field which was turnips, being supposed to be sown with oats or barley, and grass-seeds: thus the whole field would be kept in a similar state of cultivation.—*J. T.*

* Whatever may be the best theoretic system of husbandry, the quantity of arable possessed by the farmer, should be proportioned to his command of money, and the number of labourers. The plough, if used without a full supply of both, is ruinous.—*Anonymous*.

Scale of Cultivation for 100 Acres of light Soil,

Fields.	1800.	1801.	1802.	1803.	1804.	1805.	1806.	1807.	1808.	1809.
1	Grass-ley, three years old	Corn	Turnips	Corn	Clover	Corn	Turnips	Corn	Grass-ley	Grass
2	Corn	Turnips	Corn	Clover	Corn	Turnips	Corn	Grass	Grass	Grass
3	Turnips	Corn	Clover	Corn	Turnips	Corn	Grass	Grass	Corn	Turnips
4	Corn	Clover	Corn	Turnips	Corn	Grass	Grass	Corn	Turnips	Clover
5	Clover	Corn	Turnips	Corn	Grass	Grass	Corn	Turnips	Corn	Grass
6	Turnips	Turnips	Corn	Grass	Grass	Corn	Turnips	Clover	Turnips	Corn
7	Corn	Grass	Grass	Grass	Corn	Turnips	Corn	Turnips	Corn	Grass
8	Grass	Grass	Grass	Corn	Turnips	Clover	Corn	Turnips	Corn	Grass
9	Grass	Grass	Corn	Turnips	Corn	Clover	Corn	Turnips	Corn	Grass
10	Grass	Grass	Corn	Turnips	Corn	Clover	Corn	Turnips	Corn	Grass

A. R. P.

Each year there will be of corn

40 0 0

Turnips,

20 0 0

Temporary grass-ley,

30 0 0

Clover,

10 0 0

Total,

100 0 0

Remarks.

Remarks.—By the term corn, is meant wheat, rye, barley, or oats, to be sown at the option of the tenant. He might also have the liberty of sowing half of the land proposed for clover, if properly manured, with flax, rape, mustard, &c. or with vetches, or peas and beans, if well hoed; all which are good preparatory crops for wheat.

Where lime is to be had at a moderate expence, it should be used for the turnip-crop, the second year after grass, at the rate of six chaldrons per acre, if not of a very caustic quality; for the other turnip-crop, the land should be manured with dung.

The advantages of this mode of cropping and cultivation, are, that the land never bears corn two years in succession, but a meliorating intervenes between every two exhausting crops. Lime is known to lose its effect by frequent use in small quantities; but here it would only be limed once in ten years. It is also equally well known, that land tires of clover, by being frequently cropped with it; but by the preceding scale, it is only sown on the same land once in ten years; and if any of those crops which are proposed for the tenant to have a liberty to sow, in lieu of half the clover, are adopted, it only occurs once in twenty years.

The principle of the scale will admit of further variety, according to the judgment of the occupier. The grass-land, when ploughed out, may either be sown in autumn with wheat or rye, or be sown in spring with oats, peas, or beans; and that half of the land which had been limed, and bore turnips, might be sown with wheat or rye; or the whole might be sown down with barley or oats in the spring: the crop succeeding the clover, or other crop in lieu of it, also admits of the same variety.

One

One half of the land allotted for turnips, should be sown with ruta-baga, or turnip-rooted cabbage, except a part of it, which might be planted with potatoes.

The author also proposed for clover, if properly managed, with this crop, mustard, &c. or with vetches, or peas and beans, it will hood; all which are good preparatory crops for

Wheat time is to be had at a moderate expense, it should be used for the turnips, the second year after grass, at the rate of six chubrons per acre, if not of a very coarse quality; for the third year, the land should be manured with dung.

The advantages of this mode of cropping and manuring, are, that the land never bears corn two years in succession, but a manuring intervening between every two exhausting crops. Hence it knows no loss its effect by being used in small quantities, but that it would only be used once in ten years. It is also especially well known that land that is covered by being frequently cropped with it, but by the preceding scale, it is only sown on the same land once in ten years; and if any of these crops which are proposed for the rotation have a liberty to grow in five or half the clover, and adopted it only recovers once in ten years.

The principle of the scale will admit of further variety, according to the judgment of the occupier. The grass-land, when ploughed, may either be sown in autumn with wheat or rye, or be sown in spring with oats, peas, or beans; and that half the land which has been limed, and now strippe, might be sown with wheat or rye, or the whole might be sown down with barley or oats in the spring; the crop, whether the clover, or other crop in the rotation, also admits of the same variety.

SCALE OF CUMULATIVE LOSS (ONE HUNDRED)

SCALE OF CULTIVATION FOR ONE HUNDRED AND TWO

Fields.	1800.	1801.	1802.	1803.	1804.	1805.	1806.	
1	Oats or beans, } after grass	Green fallow	Oats or barley	Clover or peas	Wheat	Beans	Grass-ley*	Grass
2	Green fallow	Oats or barley	Clover or peas	Wheat	Beans	Grass-ley	Grass	Grass
3	Oats or barley	Clover or peas	Wheat	Beans	Grass-ley	Grass	Grass	Grass
4	Clover or peas	Wheat	Beans	Grass-ley	Grass	Grass	Grass	Grass
5	Wheat	Beans	Grass-ley	Grass	Grass	Grass	Grass	Grass
6	Beans	Grass-ley	Grass	Grass	Grass	Grass	Grass	Oats
7	Grass-ley	Grass	Grass	Grass	Grass	Grass	Oats or beans	Grass
8	Grass	Grass	Grass	Grass	Grass	Oats or beans	Green fallow	Oats
9	Grass	Grass	Grass	Grass	Oats or beans	Green fallow	Oats or barley	Clover
10	Grass	Grass	Grass	Oats or beans	Green fallow	Oats or barley	Clover or peas	Wheat
11	Grass	Grass	Oats or beans	Green fallow	Oats or barley	Clover or peas	Wheat	Beans
12	Grass	Oats or beans	Green fallow	Oats or barley	Clover or peas	Wheat	Beans	Grass

* Grass-ley!—What, after beans?—It will certainly be natural grass, after a rotation of oats, peas, wheat, beans.

According to the too common mode of cultivating beans as a last crop before a fallow, without manure or hoeing directed, they are made a fallow-crop; and the land will be as clean, and in as good condition, as after a crop of potatoes. the land cannot be put into a more suitable state to be sown with grass-seeds, and so profitably as is here directed.—Y

[To face Page 346.

ND TWENTY ACRES OF HEAVY SOIL..

1806.	1807.	1808.	1809.	1810.	1811.
s-ley*	Grass	Grass	Grass	Grass	Grass
s	Grass	Grass	Grass	Grass	Oats or beans
s	Grass	Grass	Grass	Oats or beans	Green fallow
s	Grass	Grass	Oats or beans	Green fallow	Oats or barley
s	Grass	Oats or beans	Green fallow	Oats or barley	Clover or peas
s	Oats or beans	Green fallow	Oats or barley	Clover or peas	Wheat
or beans	Green fallow	Oats or barley	Clover or peas	Wheat	Beans
n fallow	Oats or barley	Clover or peas	Wheat	Beans	Grass-ley
or barley	Clover or peas	Wheat	Beans	Grass-ley	Grass
er or peas	Wheat	Beans	Grass-ley	Grass	Grass
at	Beans	Grass-ley	Grass	Grass	Grass
s	Grass-ley	Grass	Grass	Grass	Grass

A. R. P.	30	0	0	10	0	0	10	0	0	60	0	0	120	0	0
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Each year there will be of white corn

beans

clover or peas

green fallow

grass

wheat, beans.—*J. Bailie.*

manure or hoeing, the last note would properly apply ; but if the beans are cultivated as a crop of potatoes, supposing the quantity of manure given to each crop to be the same : directed.—*J. T.*

1929-1930

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Remarks.—As soon as the crop of oats, or beans, after grass, is harvested, the land should be ploughed, and sown with rape and rye for spring feed for sheep, which is so much towards fitting the land for the succeeding green crop, which might be either rape, cabbages, tares, or turnips.

It would be a great advantage to the crop of beans, if the land, as soon as the preceding crop of wheat was harvested, were to be ploughed in narrow ridges of about four furrows each, and well gripped, to carry off all surface-water: by this means, the land would be laid dry, and would be greatly meliorated by so large a proportion of surface being exposed to the frosts. The land in spring, ought to have two ploughings, and be manured: the beans should be sown in rows, to admit of the land being more effectually cleaned and hoed. When the beans are harvested, the land should be again laid up in ridges, as in the preceding year, and in spring should be ploughed twice, and made fine by harrowings, and the grass-seeds sown along with some tares, or rape and rye; all to be eat off together with sheep.

The fields which have been in grass four, five, or six years, or the two last, along with the first crop of clover, would be the most proper to mow for hay.

This scale will also admit of considerable variety of cropping, without deviating from its principle: the occupier may either sow oats or beans after the grass; or teasles, rape, or flax, may be sown, if well manured for. As teasles and rape come to maturity the second year after they are sown, they occupy the land in the years it is set out for a green fallow, which they amply supply the place of, when properly cultivated; and in that case, the land would be in a good state for a wheat-crop, which would be in the place of oats or barley, and the successive crops
the

the same as in the scale. A crop of flax would make no alteration beyond the year in which it was grown.

*Draining**.—Much remains still to be done under this head. The old method, of cutting the drains above the spring, has hitherto only been practised; this, instead of curing the disease, is only an alleviation of it, and its effects are confined to a small extent; it therefore requires a great number of drains to be cut, so as to relieve a considerable extent of surface, and is consequently very expensive. I therefore recommend draining on the principles of J. ELKINGTON, as being more effectual, and attended with less expence.

Irrigation.—This would be found extremely beneficial in this Riding, many parts of it being peculiarly adapted to this improvement†.

Fences.—From that ruinous practice of heading down hedges, as before described, the tenant ought always to be restricted.

White thorns for hedges, ought to be planted older than is the present practice: instead of plants of three years old being drawn from the seed-bed, and having their tops cut off by the ground, it would be better if they were not used until they were five or six years old, and had been at least once transplanted in the nursery, and while there, at four

* A commission of sewers is much wanted all the way from Gilling to Ness and Salton, and from thence to Malton, but more so upon the Costa, Derwent, and Harford.—*E. Cleaver, Esq.*

A commission of sewers is rarely found to do any good; it soon becomes a sinecure.—*W. S.*

† Where a meadow or pasture-field can be conveniently watered, could not a pond or bason be so formed, as to give the farmer an opportunity of throwing into it a few cart-loads of lime, which, when quite dissolved, would greatly improve the quality of the water: the pond or bason, when full of this mixture, might be made to inundate the land under its influence. Would not this composition much fertilize meadow-ground? Would it not also improve the herbage of old pasture? Would it not either destroy or check the growth of moss?
—*J. Smeddle.*

years old, had been cut down to the ground. When they are planted out for the fence, it is the better practice not to cut the tops off, but leave them on their full length, and in three years after, to lay them from one to two feet high; by such means an excellent fence may be obtained, sooner by several years than by the common mode, and much labour saved in the protection of it: when the thorns are planted very young and small, with their tops cut off, great attention is necessary in protecting them from injury by weeds.

When the hedge has got to a considerable size, and thorns are wanted, or if it should grow rather open at bottom, an opportunity should be taken when the field on one side is either in ploughing or meadow, to cut off all the strongest stems on that side that can be spared, within one inch, or two inches at most, of the ground, and to dress off all the lateral branches to the top; the next year, the other side should be treated in the same manner, leaving a sufficient number of stems, of the smallest growth, in the middle of the hedge; but if both fields should be free from stock, it would be best for both sides to be trimmed at the same time; by this management, the hedge is renewed, and made extremely thick and beautiful, much more so than when clipped, and the farmer is supplied with stakes and thorns for the repairing of dead hedges.

Cattle.—It is the general opinion of the most intelligent breeders, that the present breed of horned-cattle in this Riding, may be most improved by selecting the best of their own kinds; how far this may be true in fact, it is difficult to determine, until more attentive trials have been made: a cross with the Sussex breed, appears to have been tried in Ryedale with good success. Some breeders are also of opinion, that the first cross with a Galloway Scot answers extremely well, but afterwards that the breed is
much

much hurt by it ; others are of opinion, that the breed is improved by the first cross with the long-horned breed ; but have the same objection to it afterwards, as the others have to that of the Galloway Scot.

If those crosses answer, in which the blood of each breed is equally mixed, the objections which arise from having an unequal mixture, by more of one blood being in the breed than of the other, may easily be removed, by putting half-bred cows to a half-bred bull, which would keep their descendants in the same state of improvement with themselves.

Sheep.—More attention appears to have been paid to the improvement of sheep-stock than to that of the cattle. The sheep of the low-lands, I apprehend, are in as good a line of improvement as they are capable of being put into ; and nothing more seems wanting, except the means of opening the eyes of those breeders who are prejudiced against, and will not see the advantages of the improved breed.

The sheep-stock of the Moorlands is in want of improvement, both in wool and carcase ; the former, being generally extremely coarse, and very open, does not so fully resist the severities of the weather, to which they are exposed on the high country they inhabit, as if the wool were more closely set : a quality for feeding at an earlier age than they now possess, is also very desirable to obtain.

These improvements might in a great measure be obtained by a slight cross with the Dishley breed, in the following manner :

A few moor-ewes being selected, which have the finest and the closest-set fleeces, a ram of the Dishley breed, but with short close-set wool, and not very short in the leg, should be obtained from the most barren soil on which

which such sheep are bred, to put to them : the male produce might be used as rams, to ride the stocks. How far this cross would answer, cannot be said; but seems worthy of trial, by farmers whose situations might be convenient for the purpose.

It has been suggested by a breeder on the borders of the Western Moorlands, that the present stock upon them might be gradually changed, for the Cotswold breed on the lower parts, and the South-down breed on the higher parts, with great advantage; but it does not appear that either has been attempted.

It has also been suggested, that the sheep of the Eastern Moorlands might be improved by the use of rams from the higher parts of Scotland, or Northumberland.

To excite a spirit for improvement, nothing will contribute more than the establishment of agricultural societies. In a district of the extent of this Riding, there ought not to be less than three or four societies; and if these were to act as committees to the Board of Agriculture, and to hold a constant correspondence with it, a more general dissemination of agricultural knowledge from that Board would be obtained, and each would be more assistant to the other, than if they subsisted without connection.

The establishment of agricultural seminaries, with an experimental farm to each, where young men might complete an agricultural education, would contribute more to improvements in agriculture, than any other thing that could be adopted.

which such things are said to be to them; the main pro-
posal might be compared as being, to take the words of the
author, to give a new name to the same old thing, and seems
very much of a kind, by which means, without any real im-
provement, the name is changed.

The first part of the paper is devoted to a discussion of the
question, whether the present name is better than the old one,
and if not, whether a new name should be given. The author
argues, that the present name is not only incorrect, but also
misleading, and that a new name should be given, which
shall be more correct and more expressive of the nature of the
thing.

The second part of the paper is devoted to a discussion of the
question, whether a new name should be given, and if so, what
name should be given. The author argues, that a new name
should be given, which shall be more correct and more
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APPENDIX.

OPEN FIELDS.

THOUGH this Riding possesses some extensive, open arable fields, yet, upon the whole, the quantity is not large; and they are, in some degree, annually lessening, by inclosures under acts of parliament, and would still more rapidly, but for the great expence of obtaining those acts.

The improvement made upon open fields and wastes, after inclosure, has been very great, principally by the adoption of the turnip and clover husbandry; and by the cultivation of artificial grasses, the stock has been greatly increased in numbers, and still more so in value, and the crops of corn rendered so much superior to what they were when the fields were in their open state, and fallowing was practised, that there is nearly as much corn grown, as when the whole was arable. By inclosing waste lands, large tracts, that were of very inconsiderable value, are now brought into culture; on which is reared, or maintained, a much more valuable stock than when they were in their original state, besides much corn, and the number of labourers increased also.

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posal might be made as a basis for the whole. It
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WATER-CISTERNS.

In high situations in the eastern part of this Riding, necessity has induced the inhabitants to make reservoirs, or water-cisterns, within the ground: these are fed by rain-water, which falls upon the roofs of the buildings, and is conducted from thence by spouts. In these cisterns, a very ample supply of soft water is always at hand; and, by their being under ground, and kept close, the water is sweet, and suitable to every domestic purpose.

A cube of the required size being dug in the ground, and the sides made even and perpendicular, the bottom is covered with so much clay, as that, when well beaten, will be four inches thick; a foundation of stone is then laid round the sides; upon the clay, a brick floor is laid in terras, the surface of which should not be lower than the top of the foundation; the sides are then built a single brick thick, and the bricks laid in terras, a foot space being left betwixt the wall and the earth, which is gradually filled with clay in a soft state; and this is well beaten as it stiffens; the whole is arched over, leaving a hatchway for a man to go in to clean it, and an opening into a drain, for the surplus water to run off, when the cistern is full.

The water is raised by a pump.

As keeping all external air out of the cistern, contributes much to the sweetness of the water, the pipe by which the cistern is fed, should be continued to within a few inches of the bottom; and the surplus water should be carried off by a pipe rising from near the bottom to the extreme height the water is wished ever to be at, and there communicate with the drain: by these precautions,
there

there will be more of the surface of the water exposed to the external air, than what is within those pipes and that of the pump.

THE END.

there will be more of the surface of the water exposed to the external air, than what is within those pipes and that of the pump.

DIRECTIONS FOR PLACING THE PLATES.

Plate I. to face	- - -	page 44
II.	- - -	45
III.	- - -	45
IV.	- - -	46
V.	- - -	46
VI.	- - -	78
VII.	- - -	92
VIII.	- - -	99
IX.	- - -	250
X.	- - -	251
XI.	- - -	251
XII.	- - -	251
XIII.	- - -	251
XIV.	- - -	251

